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Auerbach Associates, Inc, Philadelphia, PA

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DESIGN, DEVELOPMENT AND TESTING OF AN ENERGY-ENVIRONMENT INFORMATION TRANSFER SYSTEM

Final Report

Volume I

October 15, 1978

AAI-2428-TR-4

Contract No. 68-01-4697

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This is the final report on a project to design, develop and test an information transfer system to support energy-environment policy making and implementation decisions in Region VIII by Federal, State and local officials, and to serve the information needs on energy-environment issues of state agencies, legislatures, 208 planning agencies, Indian reservations, energy-impacted communities and other user groups. Phase I of the study, conducted by EPA, involved gathering information on potential users and user needs. This project was Phase II of the study. The report contains an analysis of user needs; definition of system functions; description of system operations, storage media and organizational arrangement; steps and costs projected for implementation; monitoring and accounting procedures; and results of the system test.

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SECTION I. EXECUTIVE SUMMARY

This report documents the efforts of AUERBACH Associates, Inc. (AAI) to design, develop and test an Energy-Environment Information Transfer System (EEITS). This work was conducted under Contract No. 68-01-4697 between August 16, 1977 and October 15, 1978, for the Office of Energy Activities (OEA) at the Environmental Protection Agency's Region VIII Office in Denver, Colorado. This system is designed to support energy-environment policy making and implementation decisions by Federal, state and local officials within Region VIII, and to serve the information needs on energy-environment issues of a wide range of user groups, including state agencies, legislatures, planning agencies, Indian reservations, energy impacted communities, universities and industry.

The objective of the project is to ensure effective utilization of a wide variety of information resources including executive summaries, technical reports, legislation and environmental and energy data banks.

This project is Phase II of a larger study of which Phase I, performed by EPA, consisted of gathering information about potential Region VIII information users and their needs. The Phase II system design is therefore based on the Phase I user data.

The Design, Development and Testing of an Energy-Environment Information Transfer System involved nine tasks:

- Task 1. Analyze the User and User Needs
- Task 2. Define the System Functions
- Task 3. Specification of System Operations
- Task 4. Selection of Storage Media
- Task 5. Describe the Organizational Arrangement for System Implementation
- Task 6. Define the Steps Involved in Detailed Systems Design and Implementation
- Task 7. Estimate the Cost Involved in Implementation and Routine Operation of the System
- Task 8. Develop Monitoring, Evaluation and Accounting Procedures
- Task 9. System Testing

The remainder of this Executive Summary (Section I of this Final Report) presents a brief overview of each task result. Complete details about the results of each task are contained in following sections of the report:

- Section II: Introduction and Background of Study
- Section III: Summary of Users and User Needs Analysis (Task 1)
- Section IV: Summary of Functional Design (Task 2)
- Section V: Specification of System Operations (Task 3)
- Section VI: Recommended Storage Media (Task 4)

- Section VII: Recommended Organizational Arrangement for System Implementation (Task 5)
- Section VIII: Steps in System Design, Test, and Implementation (Task 6)
- Section IX: Estimated Costs Involved in Implementation and Routine Operation of System (Task 7)
- Section X: Monitoring, Evaluation and Accounting Procedures (Task 8)
- Section XI: Description of System Testing (Task 9)

1.1 ANALYSIS OF USER AND USER NEEDS (TASK 1)

The following points summarize the findings from the user and user needs survey data:

- Most users have non-technical backgrounds; users with technical backgrounds are scattered randomly across many of the user groups.
- In regard to formats, most users want executive summaries and lists of what is available. They are also interested in documents dealing with energy/environment regulations and legislation, and with management and policy. Technical reports, data, statistics, etc. are needed only by those users with technical expertise, and only on a region/project/situation-specific basis.
- In regard to subject needs, the user group preferences do not break down in clear-cut group patterns. Environmental impacts is the general subject area of greatest interest, with energy resource information and socioeconomic impacts coming next. Energy/environment research projects and financial assistance information are also of considerable interest.
- Comments from respondents provide the following additional insights:
    - Bibliographies (with summaries and indexes) are highly desirable
    - Information subject needs vary by region and by project situation, and vary over time
    - Much information that is currently being sent is seen as too technical by the recipients
    - Many users need help in understanding how to apply state/Federal regulations and policies to their own region/situation.

Based on these findings, AAI developed a set of service objectives to serve as the basis for the EEITS functional design. These functional objectives are:

- Access to documents, including bibliographies and summaries
- Access to information
- Access to energy-environment data sources
- Awareness of energy-environment information products and services
- Access to informed people

The key concepts behind the five service objectives introduced above are awareness and access. These concepts, as expressed by the five objectives, serve as a basis for system functions, procedures, and products.

1.2 FUNCTIONAL DESIGN (TASK 2)

The EEITS is an information storage and retrieval system and as such, is a formalized set of functions concerned with communicating facts, data and knowledge among people for the purpose of decision making. The functional design for the EEITS has been based on objectives derived from analysis of the user and user need survey data.

The EEITS system functions were developed with full consideration for system flexibility, and are broadly categorized as input activities, file maintenance activities, and output activities all leading to a match with user needs, targeted toward the five service objectives derived from the user survey.

1.2.1 Input Activities

The EEITS will use information resources provided from a variety of sources. Functions relating to input of these resources into the system are described briefly below.

- Identification and Screening
  This is a clerical function dealing with the receipt of incoming mail and other communications, and recognition of the relevance of information resources to the EEITS.

- Analysis, Classification and Indexing
  "Analysis" is concerned with a two-part decision relating to each item judged relevant by the previous function:
  - What is the message of each item input to the EEITS which is to be conveyed to the system's user
  - What medium is appropriate for storing and/or disseminating the message

  "Classification and indexing" are concerned with encoding data for EEITS search files.

- Repackaging
  This function is involved with creating summaries, bibliographies and notifications of availability in order to make technical or non-print material comprehensible and/or known to EEITS users.

1.2.2 File Maintenance and Storage Activities

File maintenance is the function by which information accessible through the EEITS is organized for search and retrieval. The EEITS resources are retrieved through three functional files, each with its own role in the system. These files are:

- EEITS Search Files
  - Documents
  - Energy projects
  - Technical experts
    etc.
- Document Storage File
- Environmental Data Files

In addition, the EEITS will provide a mechanism to allow the EEITS to exchange data between the EEITS data files and other State and Federal energy agencies' files.

1.2.3 User Match

This function encompasses a matching operation in which formal search requests, in controlled language, are compared to the EEITS files and a system output is generated to notify a user of selected information resources that have a high probability of being of interest to the user. A second feature of the User Match Function is to consider the type of user submitting a request and determine the level of effort that EPA personnel should expend in helping to effect the information transfer process.

1.2.4 Output Activities

The EEITS output functions allow for two modes of activity. One mode allows for on-demand requests for information on a given subject. The second mode allows a user to submit a "standing order" to receive all the information which comes into the EEITS on a current basis.

1.3 SPECIFICATION OF SYSTEM OPERATIONS (TASK 3)

The following summary of system operations includes these elements:

- Recommended data bases
- Recommended indexing/classification system
- Recommended system outputs
- Detailed procedures for performing system functions

1.3.1 Selection of Data Bases

The recommended EEITS data bases include files for facilitating access to information resources and to descriptions of users; files for document storage, and files of environmental data, accessed through the Surveillance and Analysis Division of the EPA Region VIII office. The specific files included in the system are:

- EEITS Search File, which includes references to:
    - Bibliographic and audiovisual materials
    - Energy projects
    - People
    - Events
    - Groups/systems
- Document Storage File
- Environmental Data Files
- User File

1.3.2 Selection of Indexing/Classification System

An effective indexing and classification system is required for the EEITS to ensure that system resources are described in such a way that they can be matched with users and user needs. The system should also be compatible with existing EPA classifications. AAI considered several controlled vocabularies for application to the EEITS.

- Environmental Microthesaurus--A Hierarchical List of Indexing Terms Used by NTIS, May, 1977. (PB 265 261)
- Energy Microthesaurus--A Hierarchical List of Indexing Terms used by NTIS, July, 1976. (PB 254 800)
- Integrated Energy Vocabulary. NTIS, 1976. (PB 259 800)
- A vocabulary developed by AAI during Task I of this project for use in analysis of the user data

Since the EEITS is anticipated to be a relatively small system, the first three options were judged problematical because of the size of the vocabularies. The AAI vocabulary, on the other hand, while of a manageable size, was developed to represent interests reported in Phase I of this Contract and was not compatible with the NTIS terminology which is currently used in indexing EPA technical reports.

After consultation with the Project Officer, the following solution was chosen: the AAI vocabulary was revised so that whenever possible, terms from the NTIS Environmental Microthesaurus were used. In some cases, the Environmental Microthesaurus had no term at all for a concept which was in the AAI vocabulary. In these cases, the AAI term was retained, but tagged with an asterisk. The resulting controlled vocabulary (illustrated in Appendix G) is recommended for use in EEITS indexing.

1.3.3 Recommended System Outputs

There are two main categories of EEITS outputs: on-demand outputs and proactive outputs. On-demand outputs are produced in response to a specific, usually one-time, request from a user. Proactive outputs are produced in advance of user need, either as monthly automatic dissemination of information based on user subject profiles, or as products created to publicize an issue which is judged to be of interest to system users.

The following outputs are recommended for the EEITS:

- Specific documents
- Environmental data
- Factual answers to questions
- References/referrals (to documents, people, groups)
- Interpretations and syntheses of information
- Visits, seminars, workshops

1.3.4 Summary of Procedures for Performing System Functions

The following is a task-by-task outline of procedures developed for performing system functions.

- Identification and screening function
    - Entry of Resource Inputs through the mail
    - Other entry (inputs)
    - Checking for duplicates
    - EEITS Resource Input Worksheet (filling in Part I)
- Analysis, Classification and Indexing Function
    - Relevance decision
    - Repackaging decision
    - Classification/indexing decision
    - Obtaining more information
    - Creation of the citation
    - Subject indexing
    - Updating the controlled vocabulary
    - Labeling resources
    - Production of catalog card masters
- Repackaging Function
    - Types of repackaged information products
    - Condensations
    - Lists
    - Interpretations and syntheses
    - Combinations
- File Maintenance and Storage Function
    - EEITS Search File
        - Duplication of catalog cards
        - Creation/update of New Resources File
        - Creation/update of Current Resources File
        - Creation/update of Master Record of System Resources

- Document Storage File
  - Filing resource inputs
  - Weeding resources
  - Updating the Master Record of System Resources
- Environmental Data Files
  - Data Files as integrated into the EEITS Search File
  - Accessing the Data Files

- Communication with other systems and data bases
  - Identification and analysis
  - Classification/indexing
  - File maintenance
  - Accessing groups, systems, data bases

- Demand Request Function
  - Determine user priority
  - Perform query negotiation
  - Develop search strategy

- Automatic Dissemination Function
  - Determine user priority
  - Send Profile Form to user
  - Negotiate query with user
  - Complete Profile Form
  - File user profile sheets
  - Duplicate Profile Form
  - Profile Maintenance

- User Match and Information Retrieval Function
  - User Match--demand requests
  - User Match--automatic dissemination
  - User match--EPA-initiated general announcements and publicity

1.4 STORAGE MEDIA (TASK 4)

The following storage media options were investigated by AAI:

- Automated storage media
  - Punched cards
  - Disk
  - Tape
- File storage media (index cards and similar files)
- Microfilm/fiche
- Library (i.e., collection of materials in full text)

Selected for recommendation as EEITS data base storage media were the following:

File Name	Storage Media
EEITS Search file	
• New Resources File	index cards
• Current Resources File	index cards
• Master Record of System Resources	punched cards
Document Storage File	Library
Environment Data Files	Automated storage media*
User File	index file, 8 1/2 x 11" sheets

1.5 ORGANIZATIONAL ARRANGEMENT FOR SYSTEM IMPLEMENTATION (TASK 5)

1.5.1 Placement of System Within the Region VIII Office

AAI considered the following options concerning placement of the EEITS within the EPA Region VIII Office:

---

*The Environmental Data Files are to be incorporated into the EEITS "as is" and are not under its control.

- Place the EEITS within the Office of Energy Activities (OEA)
- Place the EEITS within the Region VIII Library
- Place the EEITS within the Office of Public Awareness and Intergovernmental Relations (OPAIR)
- Subcontract the operation of the EEITS to another organization (such as the Denver Public Library Regional Energy/Environment Information Center (RE/EIC).

The final arrangement, developed and recommended by AAI, is a blend of the above options. The system functions and data bases are placed in different organizational units of the EPA Region VIII so that the unit best equipped at present to perform an activity is matched with the responsibility for that activity. Responsibility for the supervision, policy, planning and design of the system is centered in an EEITS Management Committee which reports to the Region VIII Library.

1.5.2 EEITS Internal Organization

The recommended EEITS internal organization is built around the existing capabilities of EPA Region VIII organizational units. The system will be run on a day to day basis by an EEITS Management Committee, which is composed of:

- The Region VIII Librarian (Chairman)
- Director, OEA
- Director, OPAIR
- Director, Management Division
- Representatives from other groups as deemed appropriate

Each representative is responsible for seeing that the designated EEITS activities assigned to his/her organizational unit are carried out. In addition, the OEA representative acts as a liaison to obtain services from the Computer Systems Branch and the Data Analysis Branch as needed.

1.6 STEPS INVOLVED IN SYSTEM IMPLEMENTATION (TASK 6)

This section summarizes the following:

- Steps in system implementation
- Implementation schedule
- Resource requirements
- Recommended system test plan

1.6.1 Steps in System Implementation

Listed below are (a) generalized steps (steps not tied to any one function); and (b) steps required to implement specific functions.

- Generalized Implementation Steps
    - Select EEITS Management Committee members
    - Establish EEITS physical location
    - Arrange for office furniture, equipment and supplies
    - Acquire appropriate reference tools
    - Finalize and duplicate description of system procedures
    - Print copies of all forms
    - Acquire and train staff
    - Arrange for purchased services
- Identification and Screening Function
    - Arrange for mail routing
    - Notify EPA Region VIII staff of EEITS
- Analysis, Classification and Indexing Function
    - Purchase catalog cards
- Repackaging function
    - Write and disseminate EEITS publicity
- File Maintenance and Storage Function
    - Develop, test and document programs
- Demand Request Function
    - Prepare list of energy impacted communities
- Automatic Dissemination Function
    - All required steps for this function are described under generalized and User Match steps
- User Match Function
    - Develop, test and document programs

1.6.2 Implementation Schedule

The implementation schedule provides for all system functions to be fully operational at the end of six months:

- General implementation steps: carried out over a period of the first 3 months
- Identification and Screening Function and Analysis, Classification and Indexing Function: operational at the end of the second month
- Repackaging Function: operational at the end of the fifth month
- File Maintenance and Storage Function: operational at the end of the fourth month
- Demand Request Function, and Automatic Dissemination Function: operational at the end of the sixth month
- User Match Function: operational at the end of the fifth month

1.6.3 Resource Requirements for Implementation

- Staff Requirements
  - 1 Research Analyst
  - 1 Clerk/Typist
- Space Requirements
  - Approximately 200 square feet of floor space
- Equipment Requirements
  - Standard office furniture for two people
  - 7 file cabinets
- Computer Time Requirements
  - 80 minutes of CPU time to develop and test programs
- Purchased Services Requirements
  - 10 mandays of programmer support
  - Keypunching services for keying 2,200 cards
- Photocopying Requirements
  - 11,000 pages of processing forms
  - 1,000 pages of catalog cards
  - 2,000 pages constituting the User File
- Purchased Materials Requirements
  - file folders
  - catalog cards
  - general office supplies

1.7 ESTIMATED COSTS INVOLVED IN IMPLEMENTATION AND OPERATION (TASK 7)

Costs have been estimated for implementation (6 months) and for the first five years of operation for staff, space, equipment, computer time, purchased services, purchased materials, and travel. All costs were estimated, as if the system were to be created "from scratch". The cost estimates are summarized below:

TIME / RESOURCE	IMPLE-MENTA-TION	YEAR 1	YEAR 2	YEAR 3	YEAR 4	YEAR 5
STAFF	17,000	34,000	34,000	34,000	34,000	34,000
SPACE	900	1,800	1,800	1,800	1,800	1,800
EQUIPMENT	4,350	350	350	350	350	350
COMPUTER TIME	2,400	4,200	4,350	4,500	4,800	5,100
PURCHASED SERVICE	1,250	14,550	14,350	14,600	14,600	14,600
PURCHASED MATERIAL	150	100	100	100	100	100
TRAVEL AND LIVING	-	4,500	4,500	4,500	4,500	4,500
TOTAL	26,050	59,500	59,650	59,850	60,150	60,450

1.8 MONITORING, EVALUATION AND ACCOUNTING PROCEDURES (TASK 8)

Recommended monitoring, evaluation and accounting procedures designed to measure system effectiveness, and system operating costs are outlined below.

1.8.1 Measuring System Effectiveness

System effectiveness may be measured by collecting internal feedback, collecting external ("user") feedback, and by analyzing these feedbacks as indicators of the quantity and quality of system products and procedures. AAI recommends quarterly measurement and reporting for the first two years, then yearly. We have devised several reporting forms to facilitate this.

- Monitoring parameters for internal feedback
    - Number of resource inputs entering the system
    - Number of resource inputs indexed and filed
    - Number of terms added to the EEITS Controlled Vocabulary
    - Number of abstracts written
    - Number of index terms assigned per resource input
    - Number of resource inputs in each subject area
    - Number of resource inputs in each format
    - Number of demand requests entering system
    - Time range to respond to a query
    - Percent "successful" demand request responses
    - Number of current users and new users
    - Number of documents sent on automatic distribution to users
    - Number of copies made of each document
    - Types of action taken on requests
    - Formats preferred by requestors and users
    - Subjects preferred by requestors and users

- Monitoring parameters for external feedback
    - Use of EEITS Demand Request Search Form to record user feedback
    - Use of EEITS User Opinion Form to elicit user feedback
    - Use of EEITS User Interest Profile Form to elicit user feedback

Internal and external feedback may be used as indicators of system quantity and quality as in the following examples:

- Quantity
    - Comparison of input and processing quantities against original projections of quantity in the system design may indicate loss of effectiveness if actual quantities are so high that the staff is insufficient to get all the work done
    - Comparison of actual number of users against projected number of users can indicate increasing effectiveness (if number of users increases steadily and continue to request information) a lack of effectiveness (if number of users remains low, and few users submit requests more than once).

- Quality
  - Opinions of users solicited and recorded via external feedback techniques
  - Correlation of subjects and formats of items entering system with subjects and formats requested by users. If there is a low correlation, the system cannot produce quality products efficiently which are responsive to user needs.

1.8.2 Measuring Operating Costs

AAI recommends that the EEITS track its costs as they accrue and report them quarterly. Costs may be tracked by the seven categories of costs listed in Section 1.7 above.

- Staff
- Space
- Equipment
- Computer Time
- Purchased Services
- Purchased Materials
- Travel and Living

AAI has designed a cost reporting form formatted to record fixed costs (costs which are fixed in advance - e.g., space rental) and variable costs (costs which depend upon quantities processed - e.g., photocopying, keypunching).

Costs submitted quarterly should be reviewed by the EEITS Management Committee concurrently with the review of system effectiveness, as the two sets of data are interrelated.

1.9 SYSTEM TESTING (TASK 9)

AAI tested the EEITS for a period of one month. Methodology for the test was designed to come as close to "real life" as possible, in that actual documents and other inputs were used to create the files, against which real queries and profiles of real users were passed to develop test outputs. The first two weeks of the test were conducted in AAI's Philadelphia office, during which the test system was set up and run by AAI project personnel. The latter two weeks of the test were conducted at the EPA Region VIII Office in Denver, and the system was run by AAI and EPA.

All functions of the system were tested. Inputs were supplied by EPA in advance of and during the test, and included:

- Information required to create user profiles
- Queries
- Documents and other inputs

Outputs from the system test included:

- Responses to queries
- Automatic dissemination products
- Abstracts

No major problems were encountered during the test.

The test has shown that an EEITS, when implemented by EPA, will provide a workable and effective energy-environment information transfer mechanism. In addition, the test has provided EPA with a small nucleus of information resources upon which to build in implementing the system.

SECTION II. INTRODUCTION AND BACKGROUND OF STUDY

This document is the Final Report of a study to Design, Develop and Test an Energy-Environment Information Transfer System. This work was performed by AUERBACH Associates, Inc. of Philadelphia under Contract No. 68-01-4697 for the Region VIII Environmental Protection Agency (EPA) Office of Energy Activities (OEA) in Denver, Colorado. This section presents a general introduction to and description of the study, and includes:

- Organization of this Report
- Need for the Study
- Study Design

2.1 ORGANIZATION OF THIS REPORT

This Final Report is designed to address all requirements of Phase II tasks listed in Section 2.2 below. Section I of this report is an Executive

Summary of the entire report. This section, Section II, provides an introduction and relevant background information about the study. The remainder of the report is organized as follows:

- Section III is a summary of user and user needs analysis (Task 1).
- Section IV is a summary of the functional design (Task 2).
- Section V describes specification of system operations (Task 3).
- Section VI presents recommended storage media (Task 4).
- Section VII describes recommended organizational arrangement for system implementation (Task 5).
- Section VIII shows steps in system design, test and implementation (Task 6).
- Section IX presents estimated costs involved in implementation and routine operation of the system (Task 7).
- Section X describes recommended monitoring, evaluation and accounting procedures (Task 8).
- Section XI describes the methodology and results of the system test

A separate volume of supporting material contains the following Appendices:

Appendix A.	User Group Names and Respondent Titles
Appendix B.	User and User Need Data, by User Group
Appendix C.	Environmental Data Base Specifications
Appendix D.	Flow Charts Depicting Inputs, Procedures, and Outputs of Functions
Appendix E.	EEITS Resource Input Worksheet
Appendix F.	Recommended Systems and Groups with which the EEITS should Interface
Appendix G.	EEITS Controlled Vocabulary and Index

2.2 NEED FOR THE STUDY

The OEA at EPA's Region VIII office has been involved during the last several years in administering an energy-environment coordination, research and information program for the six states in Region VIII: Colorado, Montana, North Dakota, South Dakota, Utah and Wyoming. It became evident to OEA that there was a need to ensure effective transfer and utilization of the energy-environment data and information generated in the course of the program via formal and systematic means.

Concurrently, the demand for information in the areas of energy and environment had been on the rise as the Region VIII states demonstrated increased concern over energy-environment issues arising from natural resource development and exploitation. Decision makers at all levels of government were faced with assessing the individual and cumulative consequences of energy-related development upon environmental, social, and economic structures within their jurisdiction. Before making a rational decision, the decision maker should have available as much information on the subject as possible to review alternatives and estimate the consequences of each possible action. The effects of these decisions are regional in scope, requiring Federal, state, local, Indian and non-governmental coordination on a broad scale. Industrial groups in Region VII had also expressed an increasing need for information in order to support environmental investment programs.

This study was designed to produce an Energy-Environment Information Transfer System (EEITS) which will be supportive of the OEA role to foster more effective utilization of the information and data being generated by EPA Region VIII's energy-environment program, and others involved in energy-environment activities. This EEITS, when implemented, will provide for timely and responsive service to decision-makers at the Federal, state and local levels of government, as well as providing information to non-government groups.

2.3 STUDY DESIGN

This study was originally conceived in two phases by EPA: Phase I, gathering of data on users and user needs, was performed by EPA/OEA and assisted by regional agencies in the Region VIII states; and Phase II, performed by AAI, was the Design, Development and Testing of an Energy-Environment Information Transfer System. The design of the system in Phase II was based on an analysis of the user and user needs data developed in Phase I.

Phase II of the study was structured into nine tasks:

- Task 1. Analyze the user and user needs
- Task 2. Define the system functions
- Task 3. Specification of system operations
- Task 4. Selection of storage media
- Task 5. Describe the organizational arrangement for system implementation
- Task 6. Describe the steps involved in detailed system design and implementation
- Task 7. Estimate the cost involved in implementation and routine operation of the system
- Task 8. Develop monitoring, evaluation and accounting procedures
- Task 9. System testing

Figure 2-1, the EEITS Study Work Flow, illustrates the sequence and relationship among the phases and tasks making up the study design.

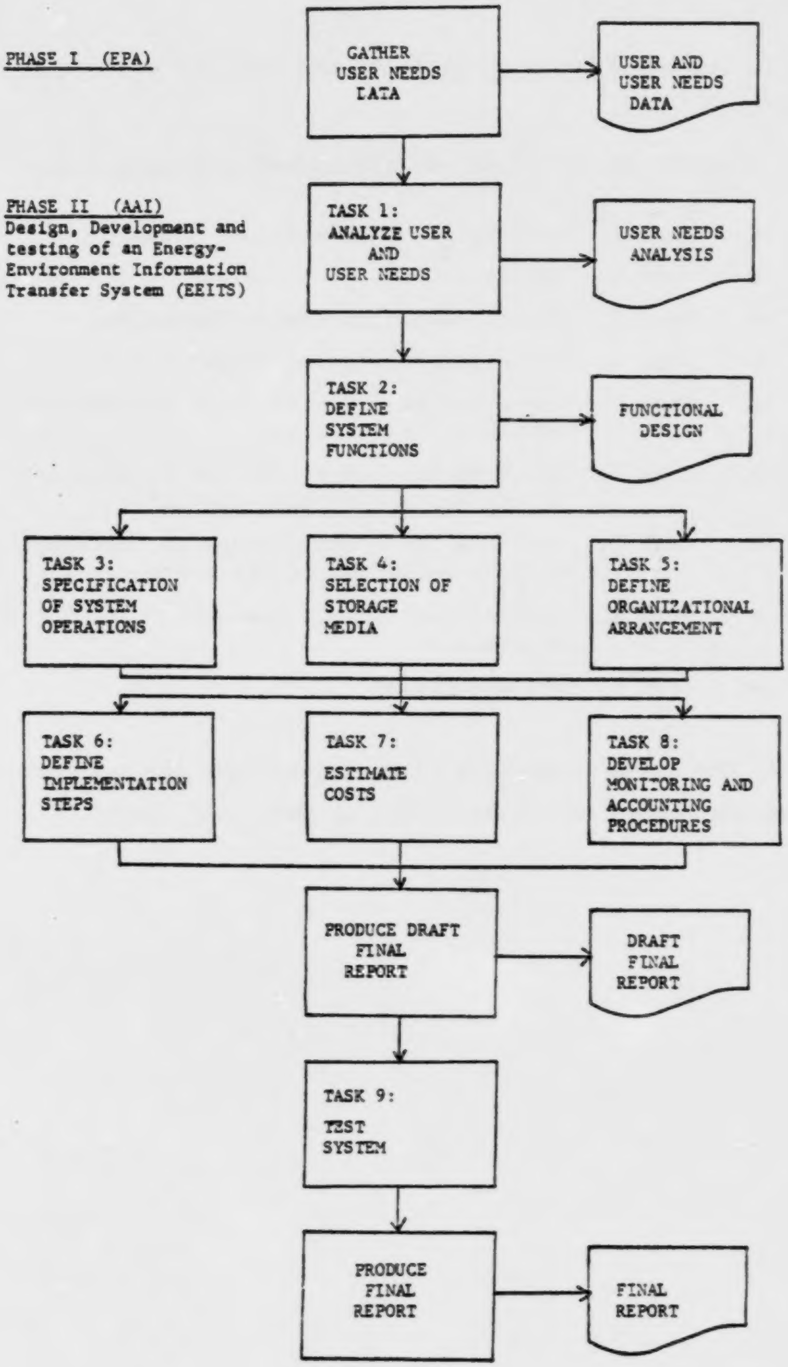
PHASE I (EPA)
GATHER USER NEEDS DATA
USER AND USER NEEDS DATA
PHASE II (AAI)
Design, Development and testing of an Energy-Environment Information Transfer System (EEITS)
TASK 1: ANALYZE USER AND USER NEEDS
USER NEEDS ANALYSIS
TASK 2: DEFINE SYSTEM FUNCTIONS
FUNCTIONAL DESIGN
TASK 3: SPECIFICATION OF SYSTEM OPERATIONS
TASK 4: SELECTION OF STORAGE MEDIA
TASK 5: DEFINE ORGANIZATIONAL ARRANGEMENT
TASK 6: DEFINE IMPLEMENTATION STEPS
TASK 7: ESTIMATE COSTS
TASK 8: DEVELOP MONITORING AND ACCOUNTING PROCEDURES
PRODUCE DRAFT FINAL REPORT
DRAFT FINAL REPORT
TASK 9: TEST SYSTEM
PRODUCE FINAL REPORT
FINAL REPORT

Figure 2-1. EEITS Study Work Flow

SECTION III. SUMMARY OF USERS AND USER NEEDS ANALYSIS
(TASK 1)

Task 1 of this contract was concerned with analyzing the user characteristics and user needs as shown in the Phase I data supplied by EPA. This analysis was structured so that resultant findings provide some basis for design and definition of system functions, operations, and requirements for the Energy-Environment Information Transfer System. This section presents the findings and the results of Task 1.

3.1 FINDINGS

The following subsections describe:

- Types of users specified in the project design
- Types of users included in the survey and the subset for whom the interview data were analyzed
- Characteristics of the users for whom the interview data were analyzed and included in the functional design of the Energy-Environment Information Transfer System
- The estimated number of potential users in Region VIII
- The information needs of the users, by type

3.1.1 Types of Users Specified in the Project Design

The projected scope of the proposed Energy-Environment Information Transfer System was planned by EPA to include approximately 350 groups of potential users of the system. These user groups were expected to fall into the following nine categories, as discussed in the Statement of Work of Contract No. 68-01-4697:

- EPA Region VIII organizational units
- Other Federal agencies
- State executive agencies
- Planning agencies
- Legislatures
- Impacted communities
- Indian reservations
- Private industry
- Universities

3.1.2 Types of Users Included in the Survey

The actual survey data covers 375 groups and 580 respondents, as shown in Figure 3-1, which are subdivided into ten data sets. (Some groups had more than one representative respondent interviewed, and in some interviews more than one respondent was interviewed.)

Each of the ten data sets covered different combinations of user group categories. Figure 3-2 shows which user group categories were present in each data set. It should be noted that no representatives from universities or "other U.S. government" were included in any of the survey data, even though these two categories were specified within the scope of the original project design (Section 3.1.1).

No single data set contained all the information required (ideally) for a detailed system design, and no two data sets presented the data elements consistently. Therefore, AAI and EPA chose to limit the detailed data analysis to those data sets which proved to be most complete and consistent. These were:

- Colorado (State Govn.)
- Montana (State Govn., western communities, and other groups)
- Utah (Local Govn.)

AREA / TYPE	COLORADO/state		COLORADO/loc.		MONTANA/eastn		MONTANA state & west.		N. DAKOTA		S. DAKOTA/ state, local		S. DAKOTA/ w. local		UTAH/ state		UTAH/local		WYOMING		TOTALS	
	NO. GROUPS	NO. RESP.	NO. GROUPS	NO. RESP.	NO. GROUPS	NO. RESP.	NO. GROUPS	NO. RESP.	NO. GROUPS	NO. RESP.	NO. GROUPS	NO. RESP.	NO. GROUPS	NO. RESP.	NO. GROUPS	NO. RESP.	NO. GROUPS	NO. RESP.	NO. GROUPS	NO. RESP.	NO. GROUPS	NO. RESP.
I. STATE GOVERNMENT USER GROUPS																						
A. Governor's Office Personnel	8	10	-	-	-	-	2	2	-	-	2	2	-	-	1	1	-	-	1	-	14(4%)	15
B. State Govern. Departments	11	50	-	-	-	-	12	12	-	-	8	8	-	-	21	21	-	-	2	-	54 (14%)	94
C. State Legislative Groups																						
1. Legislative Comm.	2	2	-	-	-	-	4	4	-	-	-	-	-	-	-	-	-	-	1	-	7(2%)	6
2. Legislative Councils	1	1	-	-	-	-	1	1	-	-	1	1	-	-	1	1	-	-	-	-	4(1%)	4
D. Misc. State Organizations	2	2	-	-	-	-	8	8	-	-	-	-	-	-	7	7	-	-	5	-	22(6%)	17
SUBTOTAL	24	65	-	-	-	-	27	30	-	-	11	11	-	-	30	30	-	-	9	-	10(27%)	136
II. LOCAL/REGIONAL GROUPS																						
A. City/Town Personnel	-	-	25	54	18	12	1	1	26	90	-	-	13	21	-	-	46	141	38	1	167(44%	320
B. County Commissions	-	-	8	8	1	1	12	12	-	-	-	-	-	-	-	-	-	-	-	-	21(6%)	21
C. County & Regional Planning	-	-	8	8	3	4	12	15	-	-	8	8	-	-	-	-	6	7	9	9	46(12%	51
D. City/County Libraries	-	-	-	-	-	-	11	11	-	-	-	-	-	-	-	-	-	-	-	-	11(3%)	11
SUBTOTAL	-	-	41	70	22	17	36	39	26	90	8	8	13	21	-	-	52	148	47	10	245(65%	403
III. CITIZEN GROUPS AND COALITIONS	-	-	-	-	-	-	13	21	-	-	-	2	-	-	-	-	8	12	-	-	21(6%)	33
IV. INDUSTRIAL GROUPS	-	-	-	-	-	-	6	6	-	-	-	-	-	-	-	-	-	-	-	-	6 (2%)	6
V. EPA	-	-	-	-	-	-	-	-	-	-	2	-	-	-	-	-	-	-	-	-	2(.5%)	2
TOTAL	24	65	41	70	22	17	82	96	26	90	21	21	13	21	30	30	60	160	56	10	375	580

Figure 3-1. Number of Users in Survey

DATA SETS \ USER GROUP CATEGORIES	State Executive Agencies	Planning Agencies	Universities	EPA	Legislatures	Impacted Communities	Indian Reservations	Private Citizens	Other U.S. Govn.	Industry
1. COLORADO (State Govn.)	X	X			X					
2. COLORADO (Local Govn.)		I				I				
3. MONTANA (Eastern Communities)						X				
4. MONTANA (State Govn. Western Communities)	X	X			X	X	X	X		X
5. NORTH DAKOTA						X				
6. SOUTH DAKOTA (State, Local Govn. and Communities)	X	X		X	X		X			
7. SOUTH DAKOTA (Western Local Govn.)						X				
8. UTAH (State Govn.)	X	X								
9. UTAH (Local Govn.)						X		X		
10. WYOMING	X	X			X	X				

I - inferrable from other data

X - explicitly present in sample

Figure 3-2. Matrix of User Group Categories Present in Data Sets (expansion)

As shown in Figure 3-2, selection of these three data sets resulted in inclusion of the following user group categories for detailed analysis:

- State executive agencies (CO, MT)
- Planning agencies (CO, MT)
- Legislatures (CO, MT)
- Impacted communities (MT, UT)
- Indian reservations (MT)
- Private citizens (MT, UT)
- Industry (MT)

Excluded were:

- Universities
- EPA
- "Other U.S. Government"

3.1.3 Characteristics of User Groups Analyzed

This subsection describes the characteristics of the user types included in the three data sets selected for analysis.

3.1.3.1 Breakdown of User Group Types

It proved useful for analysis and design purposes to break down the user group categories listed in Section 3.1.2 into a slightly narrower classification. The following list represents the more detailed classification of user group types included in the analysis:

I. State Government User Groups

    A. Governor's Office Personnel
    B. State Government Departments
    C. State Legislative Groups

        1. Legislative Committee
        2. Legislative Councils

    D. Miscellaneous State Organizations

II. Local/Regional Groups

    A. City/Town Personnel
    B. County Commissions
    C. County and Regional Planning
    D. City/County Libraries

III. Citizens Groups and Coalitions

IV. Industrial Groups

3.1.3.2 Number of Users/Groups Included

Figure 3-3 presents a chart of the number of different user group types included by state. (This chart is in effect a subset of Figure 3-1.) It should be noted that certain types had small number of representatives (e.g., industrial groups, legislative groups). Therefore, results drawn from the survey data concerning the needs of these group types should not be considered as representative as the results drawn from user group types with more representation (e.g., state government departments, city/town personnel, and citizen's groups and coalitions).

3.1.3.3 User Groups and User Group Members

The actual make-up of the user group categories is shown in Figure 3-4. The first column lists "typical" organizations considered as belonging to that user group, the second column lists typical respondent titles within those groups, and the third column summarizes available data on respondent/user background. A full list of user group names and respondent titles is included in Appendix A.

3.1.4 Estimated Number of Potential Users in Region VIII

Figure 3-1 shows the number of users in the survey, broken down by state, data set, and number of groups vs. respondents. AAI assumes that the total of groups in the survey represents a fairly close "fix" on the actual number of user groups to be served by the Energy-Environment Information Transfer System; in other words, the survey population is not a "sample", and the EEITS was conceived with a potential user population of 350-400 groups; and that in most cases a few people (one or two) in each group would serve as point(s) of contact with the system.

3.1.5 Information Needs by User Group Category

Appendix B includes User Needs data tabulations by user group. Highlights of these findings are discussed below.

AREA / TYPE	MONTANA		COLORADO		UTAH		TOTAL	
	No. Groups	No. Respondents	No. Groups	No. Respondents	No. Groups	No. Respondents	No. Groups	No. Respondents
I. STATE GOVERNMENT USER GROUPS								
A. Governor's Office Personnel	2	2	8	10	-	-	10	12
B. State Govern. Departments	12	15	11	50	-	-	23	65
C. State Legislative Groups								
1. Legislative Comm.	4	4	2	2	-	-	6	6
2. Legislative Councils	1	1	1	1	-	-	2	2
D. Misc. State Organizations	8	8	2	2	-	-	10	10
SUBTOTAL	27	30	24	65	-	-	51	95
II. LOCAL/REGIONAL GROUPS								
A. City/Town Personnel	1	1	-	-	46	141	47	142
B. County Commissions	12	12	-	-	-	-	12	12
C. County & Regional Planning	12	15	-	-	6	7	18	22
D. City/County Libraries	11	11	-	-	-	-	11	11
SUBTOTAL	36	39	-	-	52	148	88	187
III. CITIZEN GROUPS AND COALITIONS	13	21	-	-	8	12	21	33
IV. INDUSTRIAL GROUPS	6	6	-	-	-	-	6	6
TOTAL	82	96	24	65	60	160	166	321

Figure 3-3. Number of Users/Groups Included in Analysis, By Areas and Type

USER GROUP TYPES	TYPICAL USER GROUPS	TYPICAL TITLES OF RESPONDENTS	RESPONDENT/USER BACKGROUND
GOVERNOR'S OFFICE PERSONNEL	MT. Governor's Gasification Task Force	Liaison Representative	No Information in Survey Data
	State Planning and Coordinating Council	Executive Director	
	Land Use Commission	Staff Director	
STATE GOVERNMENT DEPARTMENTS	Dept. of Agriculture	Commissioner of Agriculture	Professionals with background in administration and/or technical areas, e.g. engineering. Some depts. interface with the non-technical public.
	Dept. of Health	Director of Engineering and Sanitation	
	Dept. of Natural Resources	Director, Soil Conservation Board	
STATE LEGISLATIVE GROUPS	Senate Business and Industry Committee	Chairman	Legislators: independent businessmen, e.g. ranchers, foresters. Legislative Council: researchers, attorneys, administrators - (minimal info. available in survey data)
	House Fish and Game Committee	Chairman	
	Legislative Council	Researcher; Staff Attorney	
MISCELLANEOUS STATE ORGANIZATIONS	MT. Energy Advisory Council	Energy Research Coordinator	Administrators, professionals, various technical specialists, educators
	Water Quality Bureau	Bureau Chief	
	CO Housing & Finance Authority	Executive Director	
CITY/TOWN PERSONNEL		Mayor City Manager Consulting Engineer	Part-time administrators with no formal training as such. Some engineers and technical experts are retained by municipalities on a consultant basis.
COUNTY COMMISSION		County Commissioner Administrative Officer	Part-time administrators. Private citizens who are businessmen and ranchers professionally.
COUNTY AND REGIONAL PLANNING	Area-wide Planning Organiz.	Water Quality Specialist	Professional planners, administrators, researchers with degrees in planning, engineering, architecture
	City/County Planning Comm.	Director	
	Planning and Zoning Comm.	Commissioner	
CITY/COUNTY LIBRARIES		Chief Librarian Librarian	Library users mostly private citizens. Some students, some have technical/research backgrounds.
CITIZEN GROUPS AND COALITIONS	Intermountain Consumer Power Assn.	Member	Mostly private citizens without technical background. A few groups have members with technical background, attorneys, etc.
	MT. Wilderness Assn.	President	
	N. Rockies Action Group	Director	
INDUSTRIAL GROUPS	Coal Council	Executive Director	Private citizens; engineers, professionals
	AFL - CIO	Member	
	Montana Stockgrowers Assn.	Executive Vice President	

Figure 3-4. User Groups and User Group Members

3.1.5.1 Formats

Figure 3-5 summarizes the format preferences of the ten user group types. In this exhibit, formats are grouped by percentage of users selecting that format. Within each block, formats are listed in order of preference, (e.g., for "Governor's Office Personnel" in the second column, technical reports were preferred by more of that group than legislation/ regulations.) Of overall preferences, executive summaries are far and above the most preferred format for all user groups except libraries and miscellaneous state organizations, for whom they are the second most preferred format. Also high ranking are energy/environment legislation/regulations, technical reports, and management reports (especially the Region VIII Accomplishment Plan).

3.1.5.2 Subjects

Subject needs, as expressed by survey respondents, were classified into both broad and narrow categories. The major categories consisted of the following:

- *Energy resources (coal, oil shale, petroleum, etc.)
- *Environmental impacts (air quality, water quality, etc.)
- *Biological impacts (human health, plant life, etc.)
- *Socioeconomic impacts (taxes, housing, social structure, etc.)
- Financial assistance information
- Pollution control
- Energy/Environmental research projects

Broader categories marked with the asterisk (*) were broken down into narrow categories including those given as examples in parentheses.

Figures 3-6 and 3-7 present the broad and narrow subject areas selected by more than 25% of the respondents. Within each block, subjects are listed in order of preference. Narrower subject areas within "energy resources" are not reported here, as the correlation is geographic rather than by user group type. Among overall subject needs, "Environmental impacts" is the broad subject class of greatest or second greatest interest to all user groups. The subcategories of "environmental impacts" (water quality, air quality, water supply, noise, pesticides, radiation, drinking water, sewage/ solid wastes) are the most frequently selected specific subjects. High interest is also shown in energy resource topics, socioeconomic impacts, financial assistance information, and energy/environment research projects.

TYPE OF USER GROUP	SELECTED BY 75%+ OF RESPONDENTS	SELECTED BY 50-74% OF RESPONDENTS	SELECTED BY 25-49% OF RESPONDENTS
GOVERNOR'S OFFICE PERSONNEL	EXECUTIVE SUMMARIES	TECHNICAL REPORTS E/E LEGISLATION/REGULATIONS MANAGEMENT REPORTS*	NONE
STATE GOVERNMENT DEPARTMENTS	NONE	EXECUTIVE SUMMARIES	E/E LEGISLATION/REGULATIONS TECHNICAL REPORTS MANAGEMENT REPORTS *
STATE LEGISLATIVE GROUPS	EXECUTIVE SUMMARIES	NONE	E/E LEGISLATION/REGULATIONS MANAGEMENT REPORTS *
MISCELLANEOUS STATE ORGANIZATIONS	NONE	TECHNICAL REPORTS	EXECUTIVE SUMMARIES BIBLIOGRAPHIES STATISTICS EXPERT CONSULTANTS
CITY/TOWN PERSONNEL	EXECUTIVE SUMMARIES** E/E LEGISLATION/REGULATIONS TECHNICAL RPTS & DATA	NONE	NONE
COUNTY COMMISSIONS	NONE	EXECUTIVE SUMMARIES	BIBLIOGRAPHIES
COUNTY AND REGIONAL PLANNING	NONE	EXECUTIVE SUMMARIES	NONE
CITY/COUNTY LIBRARIES	NONE	BIBLIOGRAPHIES EXECUTIVE SUMMARIES	MAPS/GRAPHICS TECHNICAL REPORTS STATISTICS
CITIZEN GROUPS AND COALITIONS	NONE	EXECUTIVE SUMMARIES BIBLIOGRAPHIES E/E LEGISLATION/REGULATIONS	STATISTICS/DATA
INDUSTRIAL GROUPS	NONE	EXECUTIVE SUMMARIES	TECHNICAL REPORTS

*Region VIII Accomplishment Plan

**Executive summaries to mayors, town presidents; legislation to clerks, administrators; technical data to consulting engineers.

Figure 3-5. Format Preferences

AAT

TYPE OF USER GROUP	SELECTED BY 75% + OF RESPONDENTS	SELECTED BY 50-74% OF RESPONDENTS	SELECTED BY 25-49% OF RESPONDENTS
GOVERNOR'S OFFICE PERSONNEL	ENERGY RESOURCES ENVIRONMENTAL IMPACTS	FINANCIAL ASSISTANCE INFORMATION	SOCIOECONOMIC IMPACTS ENVIRONMENTAL IMPACT STATEMENTS (EIS)
STATE GOVERNMENT DEPARTMENTS	ENVIRONMENTAL IMPACTS	FINANCIAL ASSISTANCE INFORMATION	ENERGY RESOURCES BIOLOGICAL IMPACTS SOCIOECONOMIC IMPACTS EIS
STATE LEGISLATIVE GROUPS	ENERGY RESOURCES ENVIRONMENTAL IMPACTS	SOCIOECONOMIC IMPACTS	BIOLOGICAL IMPACTS FINANCIAL ASSISTANCE INFORMATION
MISCELLANEOUS STATE ORGANIZATIONS	ENERGY RESOURCES ENVIRONMENTAL IMPACTS SOCIOECONOMIC IMPACTS	E/E RESEARCH PROJECTS	FINANCIAL ASSISTANCE INFORMATION POLLUTION CONTROL
CITY/TOWN PERSONNEL	ENERGY RESOURCES ENVIRONMENTAL IMPACTS SOCIOECONOMIC IMPACTS FINANCIAL ASST. INFO.	NONE	NONE
COUNTY COMMISSIONS	ENVIRONMENTAL IMPACTS	ENERGY RESOURCES SOCIOECONOMIC IMPACTS FINANCIAL ASST. INFO.	BIOLOGICAL IMPACTS E/E RESEARCH PROJECTS
COUNTY AND REGIONAL PLANNING	ENERGY RESOURCES ENVIRONMENTAL IMPACTS SOCIOECONOMIC IMPACTS	NONE	BIOLOGICAL IMPACTS FINANCIAL ASSISTANCE INFORMATION E/E RESEARCH PROJECTS
CITY/COUNTY LIBRARIES	ENERGY RESOURCES ENVIRONMENTAL IMPACTS BIOLOGICAL IMPACTS SOCIOECONOMIC IMPACTS	E/E RESEARCH PROJECTS	POLLUTION CONTROL
CITIZEN GROUPS AND COALITIONS	ENERGY RESOURCES ENVIRONMENTAL IMPACTS SOCIOECONOMIC IMPACTS	BIOLOGICAL IMPACTS E/E RESEARCH PROJECTS	FINANCIAL ASSISTANCE INFORMATION WHAT OTHER AREAS HAVE DONE
INDUSTRIAL GROUPS	ENERGY RESOURCES ENVIRONMENTAL IMPACTS BIOLOGICAL IMPACTS	E/E RESEARCH PROJECTS	SOCIOECONOMIC IMPACTS

Figure 3-6. Subject Needs (Broad Classes of Subjects)

TYPE OF USER GROUP	SELECTED BY 75%+OF RESPONDENTS	SELECTED BY 50-74% OF RESPONDENTS	SELECTED BY 25-49% OF RESPONDENTS
GOVERNOR'S OFFICE PERSONNEL	NONE	AIR QUALITY WATER QUALITY SEWAGE/SOLID WASTE	DRINKING WATER NOISE SOCIAL STRUCTURE ECONOMICS
STATE GOVERNMENT DEPARTMENTS	NONE	WATER QUALITY SEWAGE/SOLID WASTE AIR QUALITY	DRINKING WATER NOISE
STATE LEGISLATIVE GROUPS	NONE	WATER QUALITY	AIR QUALITY WATER SUPPLY TAXES
MISCELLANEOUS STATE ORGANIZATIONS	NONE	TAXES	ENVIRONMENTAL MONITOR. AIR QUALITY WATER QUALITY RADIATION NOISE EDUCATION
CITY/TOWN PERSONNEL	SEWAGE/SOLID WASTE DRINKING WATER WATER TREATMENT WATER QUALITY	AIR QUALITY	STORM WATER NOISE SOCIAL STRUCTURE ECONOMICS HOUSING LAW ENFORCEMENT/FIRE MEDICAL
COUNTY COMMISSIONS	NONE	WATER QUALITY TAXES	SEWAGE/SOLID WASTE WATER SUPPLY AIR QUALITY PESTICIDES
COUNTY AND REGIONAL PLANNING	WATER QUALITY	SEWAGE/SOLID WASTE AIR QUALITY	WATER SUPPLY NOISE SOCIAL STRUCTURE ECONOMICS , TAXES RECREATION EDUCATION
CITY/COUNTY LIBRARIES	NONE	TAXES WHAT OTHER AREAS HAVE DONE	AIR QUALITY WATER QUALITY ENVIRON. MONITORING PESTICIDES WATER SUPPLY HUMAN HEALTH PLANTLIFE/AGRICUL. WILDLIFE DOMESTIC/FARM ANIMALS SOCIAL STRUCTURE ECONOMICS RECREATION
CITIZEN GROUPS AND COALITIONS	NONE	AIR QUALITY WATER QUALITY	SEWAGE/SOLID WASTE WATER SUPPLY PLANT LIFE/AGRICUL. WILDLIFE HUMAN HEALTH SOCIAL STRUCTURE ECONOMICS TAXES
INDUSTRIAL GROUPS	WATER QUALITY	DOMESTIC/FARM ANIMALS PLANT LIFE/AGRICULTURE	AIR QUALITY PESTICIDES LAND USE WATER SUPPLY EDUCATION RECREATION

Figure 3-7. Subject Needs (Specific Subjects)

The other specific subjects selected most (other than environmental impact) were socioeconomic impacts: taxes, social structure, economics.

3.1.5.3 Comments

Many respondents offered comments which were incorporated into the survey data. Since many of the data set survey forms were structured in such a way so as to allow only certain responses, the comments represent input over a wider range of information product possibilities. Below, input from comments are summarized by user group type.

- Governor's Office Personnel
  - Request monthly list of EPA publications
  - Express need for a region-wide EIS/monitoring system of energy development
- State Government Departments
  - Interested in both national trends and state/regional issues
  - Mentioned frequently: a monthly list of EPA publications with summaries
  - Some departments need educational materials: brochures, news releases, elementary grade level materials, slide shows, etc.
- State Legislative Groups
  - State legislators get information mostly from Legislative Council, lobby groups, media. Usually little current interface with EPA
  - All information (especially for Legislative Councils) needed on extremely short notice
- Miscellaneous State Organizations
  - Expressed need for lists of what is available (e.g., bibliographies and summaries)
  - More information needed specific to region/situation; information should be aimed for use at local level
  - Would like a centralized system for information
- City/Town Personnel
  - This group consists of part-time officials who are overwhelmed by recent impacts, especially as felt in water/sewer areas. Funding lags behind needs.
  - Material currently sent "too long, too technical, too full of jargon." Wanted: summary of available programs and an EPA representative available for consultation
- County Commissions
  - Don't know what information is available
  - Feel they get too much information
  - Want situation-specific and region-specific information
  - Have problems understanding state/federal regulations

- County and Regional Planning
    - Don't know what information is available
    - Feel they get too much untargeted information
    - Want situation-specific and region-specific information, especially baseline studies
    - Have problems understanding state/Federal interaction, e.g., laws, regulations, policies

- City/County Libraries
    - Don't know what is available
    - Need general interest information, rather than technical
    - Favor regional/state depository or regionally-focused Federal informative system
    - Favor networking and interlibrary loan

- Citizen's Groups
    - Strong regional interest
    - Need summaries of government activities (legislation, projects, funding) impacting region
    - Would like regularly issued bibliographies, summaries, index, newsletters, of EPA publications and activities

- Industrial Groups
    - Currently not dealing much with EPA. Get much more information from professional groups, universities, and somewhat from state and Federal governments.

In summary, the most frequent comments were the following:

- Need regular lists of publications and programs with indexes and summaries.
- Information that is region-specific and situation-specific is needed rather than general or untargeted information.
- Too much information is currently sent, and it is too technical.
- Have problems making sense out of state and Federal regulations.

3.2 RESULTS

3.2.1 General Implications

Based on the findings, the following statements can be made about potential EEITS users and their needs:

- Most users have non-technical backgrounds; users with technical backgrounds are scattered randomly across many of the user groups.
- In regard to formats, most users want executive summaries and lists of what is available. They are also interested in documents dealing with energy/environment regulations and legislation, and with management and policy. Technical reports, data, statistics, etc. are needed only by those with the technical expertise, and only on a region/project/situation-specific basis.
- In regard to subject needs, the user group preferences do not break down into clear-cut group patterns. Environmental impacts is the general subject area of greatest interest, with energy resource information and socioeconomic impacts coming next. Energy/environment research projects and financial assistance information are also of considerable interest.
- Comments from respondents provide the following additional insights:
  - Bibliographies (with summaries and indexes) are of higher desirability than responses to "format" preferences indicate
  - Information subject needs vary by region and by project situation
  - Much information that is currently being sent is seen as too technical by the recipients
  - Many users need help in understanding how to apply state/Federal regulations and policies to their own region/situation.

3.2.2 Implications of Findings in Developing the System Functional Design

In consideration of the user survey data findings and the general remarks presented above, AAI developed a set of objectives to serve as a basis for the EEITS system functional design (discussed in Section IV, following). These objectives, together with the specific rationale behind their formulation, are discussed briefly below.

3.2.2.1 Access to Documents, Including Bibliographies and Summaries

It is clear that many types of printed materials are of considerable value to potential users of the EEITS in their original form. Consequently, there is a need for the EEITS to selectively forward documents that come into it to users whose interests match the level of sophistication and subject content of incoming documents. In part, the need can be met by automatically disseminating documents as they are received by the EEITS. However, instead of simply receiving documents sent automatically, many users wish to initiate document delivery on specific topics, themselves, as their information needs vary on a regional/project/time basis. Therefore, we conclude that access to documents through retroactive search files as well as on an automatic basis according to specifically defined standing requests, are primary objectives of the system. Document types available should include bibliographies, summaries of all types, legislative/regulatory documents, policy and planning documents, and technical reports.

3.2.2.2 Access to Information

Documents are one method by which information is distributed. However, in some situations, and for some EEITS users, original documents may not be an effective medium for information transfer. When appropriate, the EEITS must provide alternative media for presenting energy-environment issues including:

- Seminars and conferences to apprise regional groups on the relevance of recent legislation and EPA program plans.
- Abstracts and summaries of technical reports, targeted to non-technical users.
- Personal consultation and advisory services from EPA representatives.
- Aid in locating sources of information in addition to the EEITS files.
- Experts to analyze and interpret technical materials in lay and/or regional terms.

3.2.2.3 Access to Energy/Environment Data Sources

Those users with technical background and need for technical information (users in state government, planners, engineers, etc.) need access to specific data through sources such as SAROAD, STORET, and REAP. The EPA EEITS can act as a switching center, referring users, at their request, to the data source(s) most likely to be responsive to their information needs.

3.2.2.4 Awareness of Energy-Environment Information Products and Services

Many users stated that they don't know what information is available from EPA. The EEITS should provide a full spectrum of awareness tools to encourage the potential Region VIII users to become actual system users, and to alert current users to other sources and types of information. This is, in essence, an advertising/promotion objective. Products to satisfy this objective could include bibliographies, indexes, brochures, system descriptions, etc.

3.2.2.5 Access to Informed People

In many situations where information is needed, a dialog process between user and provider of the information is helpful (and may prove essential) in clarifying the need and targeting the response. For this reason, a most important resource of such an information system as the EEITS is informed people: experts, consultants, technicians, educators and persons with detailed knowledge of specific energy projects who can respond to users on a person-to-person basis. Therefore, it is an objective of the EEITS to provide a registry of informed people.

3.2.3 Conclusion

In summary, the key concepts behind the five functional objectives introduced above are awareness and access. Users have specific, varied, and changing needs. They express the strong preference to learn what is available (awareness) and then to initiate, themselves, the information transfer cycle on specific topics (access).

The concepts of awareness and access as expressed by the five objectives, must serve as a basis for the system functional design which can satisfy these objectives and in turn lead to system outputs and procedures specifications. Section IV, following, describes a functional design which fulfills these criteria.

SECTION IV. SUMMARY OF FUNCTIONAL DESIGN (TASK 2)

The functional design presented in this section is a general system description, and includes:

- Scope of the EEITS
- General System description in terms of
    - EEITS input functions
    - EEITS processing functions
    - EEITS output functions

More detailed information on systems components and procedures is given in the following sections: Section V. Specification of System Operations and Section VI. Recommended Storage Media.

4.1 SCOPE OF THE ENERGY-ENVIRONMENT INFORMATION TRANSFER SYSTEM

The EEITS is an information storage and retrieval system. As such, it is a formalized set of functions concerned with communicating facts, data and knowledge among users for the purpose of decision making. As discussed in Section III, the variety and range of user needs which can be inferred from the user survey data is great. Consequently, the EEITS must have the capability of providing a broad base of information to state and local officials and planning professionals in EPA Region VIII energy impacted localities with respect to all air pollution, water pollution and the socioeconomic impacts associated with energy development.

One aspect of the EEITS is designed to make information materials available to users on a proactive basis according to their specific interests and abilities to comprehend the material.* Another key aspect of the EEITS will be its capability to respond to user initiated requests for information and to identify appropriate EPA resources to satisfy the request according to the urgency and importance of each request.

According to the AAI project team's assessment of the user data, the crucial requirements, from an information system point of view, are twofold. First, users need to be made aware of what EPA information resources are available to them; and second, the EEITS must have the ability to provide access to specific information and information resources upon request.

4.1.1 Service Objectives of the EEITS

It should be recognized that technical and other informational documents produced by EPA and other energy-concerned Federal agencies will go far in helping to inform many users of the EEITS. Nevertheless, printed documents alone will not be sufficient to meet all the information needs of EEITS users. Therefore, while outputs of documents and other "hard-copy" printed materials will constitute a major component of the EEITS service, the overall objectives of the EEITS go beyond simply providing documents. The purpose of the EEITS is summarized in five functional objectives. They are:

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*"Proactive" is used in the context to mean a service which is provided on automatic basis rather than as a reaction to a specific _ad hoc_ request.

1. Provide access to documents
2. Provide access to information
3. Provide access to energy-environment data sources
4. Provide awareness of the EEITS products and services
5. Provide access to informed people

4.1.2 Considerations for Design Flexibility

The EEITS is designed for flexibility. In essence, it is designed to match energy-environment resources with users who require such information when the users say they want the information. The inputs to the EEITS can encompass a full range of energy-environment resources from whatever source they originate. However, the EEITS is not concerned with generating initial source materials and information resources such as trained experts, technical reports, journal articles, data bases, audio-visual materials, and so forth. Nevertheless, as such materials become known to the EEITS each resource will be used to generate a record in an EEITS master file for future reference and referral in response to user initiated requests. Moreover, for those users who may wish to receive information from the EEITS on a routine basis, the EEITS will provide automatic dissemination of information and materials in accordance with user profiles.* An additional function contemplated for the EEITS is that materials and informational items which are input to the EEITS but are non-specific to Region VIII or too technical to be of general interest in this full form will be "repackaged" by the EEITS as newsletters, excerpts or non-elaborate announcement brochures. These products are intended to capture the interest of EEITS users who may then request that the EEITS forward the full materials or put them in touch with an informed person who can discuss the local significance of the informational item in a knowledgeable manner.

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*User profiles are lists of specific subjects and information media that are of interest to a given user or group of users. Materials input to the EEITS which match a user's profile will be forwarded to participating users without their having to request them.

TABLE 4-1. SOURCES OF EEITS INPUT

I. Documents

- a) Technical reports and summaries provided by EPA Region VIII Offices
- b) Technical reports and summaries provided by State, Regional and Local agencies within Region VIII
- c) Technical reports and summaries provided by EPA Office of Research and Development (particularly the Office of Energy, Minerals and Industry)
- d) Monitoring information including reports and raw data
- e) Energy-related legislation
- f) Energy-related guidelines
- g) Environmental Impact Statements (EIS) and reviews
- h) Official correspondence and memoranda
- i) Pamphlets and brochures
- j) EPA newsletters (quarterly)
- k) Abstracts including NTIS Weekly Government Abstracts for "Energy" and "Environment", and "Major Recent Publications of the Interagency Energy/Environment R&D Program", published by EPA/ORD (OEMI)
- l) Energy-Environment related bibliographies

II. EPA Consultants

Technical experts available for on-site visits such as those planned for the 208 (Water Quality) planning agencies to explain the Surface Mining Act and Regulations and to assist local communities plan for energy development impacts.

III. Films and other Audio-visual Materials

- a) Non-print collection of the Regional Energy-Environment Information Center at the Denver Public Library
- b) Non-print materials provided by EPA

IV. Seminars and Demonstrations

Prepared EPA programs on community impacts, modeling, planning and so forth.

V. Data Files (including operational and proposed files)

- a) STORET
- b) SAROAD
- c) Notice of Violations (Enforcement Data Bases)
- d) Summary environmental data files (generated upon request for State and Regional planning agencies, grantees, and contractors. Basically these are subsets of STORET and SAROAD of special interest to Region VIII

The outputs generated by the EEITS will provide a variety of options ranging in elaboration from referring a user to a specific document or document source, such as the Energy/Environment Information Center at the Denver Public Library, to arranging an on-site seminar or workshop to discuss specific problems with officials and citizens of an energy impacted community.

In order for the EEITS to provide maximum response flexibility, it is designed to operate efficiently with a fairly low volume of activity. Response times will vary from a few minutes for referrals to several man-days of effort depending upon the level of elaboration to be expended on the responses. The more elaborate responses may be met by EPA technical experts who will be called upon to augment the EEITS.

4.2 GENERAL SYSTEM DESCRIPTION

This section provides a overview of the EEITS functional design. The EEITS has been designed with careful consideration having been given to satisfying the currently identifiable needs of the EEITS users represented in the Phase I user data and to the need for design flexibility in order to respond to future needs. AAI believes the referral concept, which is responsive to user initiated requests and underlies the EEITS design, provides a miximum degree of design flexibility. Moreover, it is directly responsive to the characteristic self-reliance of the EEITS users as discussed in Section III.

Figure 4-1 presents a graphic overview of the functions to be performed by the Energy-Environment Information Transfer System. As the diagram shows, the functions are broadly categorized as input activities, file maintenance activities, and output activities all leading to a user match. This functional design fulfills the objectives of (1) access to documents, (2) access to information, (3) access to energy-environment data sources, (4) awareness of information products and services, and (5) access to informed people.

4.2.1 EEITS Inputs and Input Functions

The EEITS will use documents and information resources provided from a variety of sources. Table 4-1 lists the primary inputs of interest to the EEITS. It is important to emphasize that the EEITS does not generate these

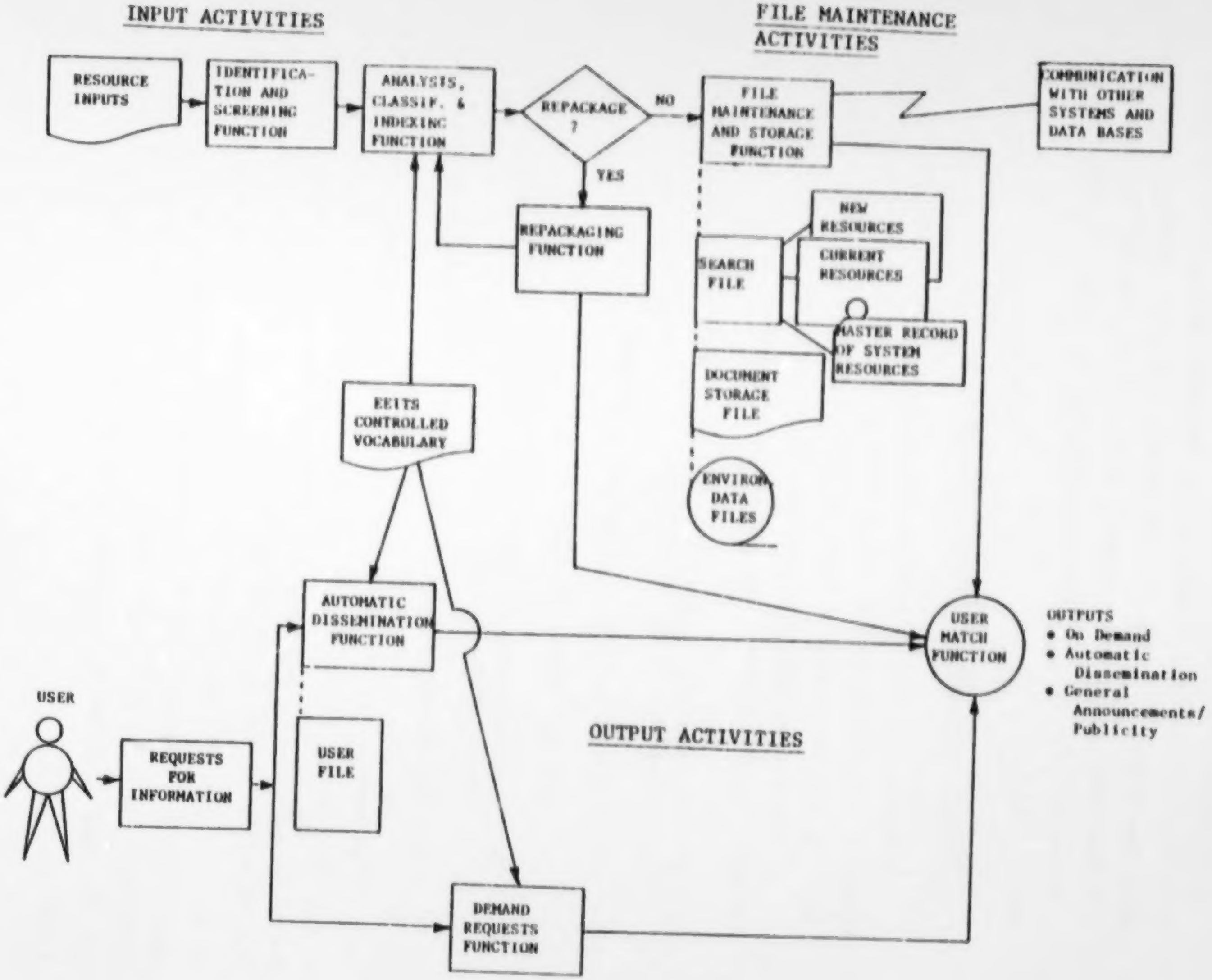
INPUT ACTIVITIES
FILE MAINTENANCE ACTIVITIES
RESOURCE INPUTS
IDENTIFICATION AND SCREENING FUNCTION
ANALYSIS, CLASSIF. & INDEXING FUNCTION
REPACKAGE ?
NO
YES
FILE MAINTENANCE AND STORAGE FUNCTION
COMMUNICATION WITH OTHER SYSTEMS AND DATA BASES
REPACKAGING FUNCTION
SEARCH FILE
NEW RESOURCES
CURRENT RESOURCES
MASTER RECORD OF SYSTEM RESOURCES
DOCUMENT STORAGE FILE
ENVIRON DATA FILES
EEITS CONTROLLED VOCABULARY
AUTOMATIC DISSEMINATION FUNCTION
USER MATCH FUNCTION
OUTPUTS
• On Demand
• Automatic Dissemination
• General Announcements/ Publicity
USER
REQUESTS FOR INFORMATION
USER FILE
OUTPUT ACTIVITIES
DEMAND REQUESTS FUNCTION

Figure 4-1. EEITS System Functions

information resources itself. Primarily, it encodes and stores references to existing documents and other information resources which will be submitted to the EEITS through the OEA, as well as all relevant information resources that come to the Region VIII OEA through normal channels. However, it will not be a formal function of the system to actively seek out and collect data sources, documents and other information resources of potential interest to EEITS users.

4.2.1.1 Identification and Screening Function

This function has to do with receipt of incoming mail and other communications and recognition of the relevance of information resources to the EEITS. As documents arrive each day, the EEITS selector will choose items relevant to energy environment issues and assign them for EEITS processing. The selection process involves the following procedures:

- Consider the general information content and format of the document - "What is it?"
- Scan the text or appropriate summaries
- Scan any tables of data
- Read any covering letters and note the reason, if any, why the document was sent to OEA
- Decide whether the document should be processed by the EEITS

Items of no interest to the EEITS are immediately forwarded to the addressee. On the other hand, if the decision is made to process the document, a separate copy should be made or requested for the EEITS, if necessary, and the original is then forwarded to the addressee without delay. A processing form will be used to indicate the need for indexing or classification, and to serve as a file update input worksheet. It will be attached to the document at the time the decision is made to include an item in the EEITS and accompany it through all the input processing functions until the document is incorporated into the EEITS.

4.2.1.2 Analysis, Classification, and Indexing Function

"Analysis" involves a two-part decision:

(a) What is the message of each item input to the EEITS which is to be conveyed to the system users, and

(b) What medium is appropriate for disseminating and/or storing the message.

Classification and indexing is concerned with encoding data for EEITS Search File. Classification is concerned with grouping information resources under major headings in a organized reference file. Indexing is an intellectual process concerned with characterizing the information content and concepts of EEITS inputs. The classification and indexing function will be accomplished through assignment of specific descriptive terms from a controlled vocabulary* to each item of input to the EEITS. Classification will also characterize resources by type.

4.2.1.3 Repackaging Function

"Repackaging" involves creating new information products (such as bibliographies, summaries) from existing documents and information resources in order to make the information content more consonent with user comprehension abilities and format preferences. Many of the resources offering potentially useful information of interest to EEITS users will not have wide acceptability and utility in their original form. As an obvious example, a film on the effects of thermal pollution resulting from processes associated with energy development industries could not be duplicated and disseminated to the many registered EEITS users who indicate interests in the subject. Moreover, while official correspondence may contain implications for Region VIII communities in energy impacted areas which the EEITS should communicate to state and local officials, the implications might have to be put in a local context such that the meaning for the local communities is clear.

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*The EEITS Controlled Vocabulary is presented in Section 5.2.

Methods of repackaging information may include: summaries of technical reports and other documents, bibliographies of print and non-print resources on specific subjects, and notifications of the availability of information resources which can not be widely disseminated on an automatic basis.

4.2.2 File Maintenance

File maintenance is the function by which information accessible through the EEITS is organized for search and retrieval. The EEITS resource files comprise three functional files, each with its own role in the system. These files are:

- EEITS Search File
- Document Storage File
- Environmental Data Files

4.2.2.1 EEITS Search File

The EEITS Search File is a compact, sequential file which provides efficient searching on a large number of data elements. The search file is a tool for comparing the descriptions of EEITS resources (created by indexing and classification) with descriptions of requests for information. As Figure 4-1 shows, the descriptions of both the resources and the requests are represented by lists of terms selected from a common, controlled vocabulary. Retrieval is the result of matching a set of request terms with the descriptions of particular information resources and finding concurrence.

4.2.2.2 Document Storage File

The role of the document storage files is to provide a convenient, local resource of full text materials to disseminate to EEITS users upon request or in support of an EEITS search. While one primary function of the EEITS is to automatically disseminate materials to interested users on a proactive basis, it must be recognized that not all needs can be anticipated in advance. Consequently, the EEITS must maintain a document resource. This file will contain all full text materials of lasting value which can be stored in a

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*The User File is considered part of the Automatic Dissemination Function.

library-like manner, such as on shelves, in cabinets or on microform. It will be linked to the search files by identifiers, codes, titles or such other types of file headers. If the document storage function is delegated to an existing library or libraries, the document may also be accessible through that institution's catalog files.

4.2.2.3 Environmental Data Files

These files will consist of AEROS* and subsystems and STORET (Storage and Retrieval for Water Quality Data). These files will be utilized as provided by EPA and will not require modification. The function provided by the EEITS has to do with user interface.

4.2.2.4 Communication with Other Information Systems and Data Bases

Interface with other agencies will allow the EEITS to provide an extensive range of information to its users, again as in the case of the environmental data base with the assistance of energy oriented individuals to put the information in an energy context. In addition to interaction with other energy information systems, the EEITS will have links through the EEITS search file to commercial data bases and the computer literature searching and data bases of EPA's Environmental Research Center at Cincinnati, Ohio.

4.2.3 EEITS Output Functions

The EEITS output function allows for two modes of activity. One mode allows for on-demand requests for information on a given subject (Demand Requests Function). This type of request will ordinarily be a one-time request in which the role of the output function is to structure the request into a formal list of search parameters, including terms from the EEITS controlled vocabulary and user class/level of response parameters. Such a search is referred to as a "retroactive" search because it results in a report or list of all the resources known to the EEITS from its inception which match the search parameters.

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*AEROS: Aerometric and Emissions Reporting System

The second mode allows a user to submit a "standing order" to receive all the information on a specified subject which comes into the EEITS on a current basis (Automatic Dissemination Function). This mode utilizes a formal request consisting of terms from the controlled vocabulary against which the input to the system is matched as part of the user match function. In the EEITS, this mode of output is referred to as "proactive."

4.2.4 User Match Function

User match is the central function of the EEITS, in which formal search requests, in controlled language, are compared to the EEITS files and outputs are prepared and sent to users. This function is carried out on each request on an independent basis. Thus, individualized outputs are generated for each specific request.

A second feature of the user match function is to consider the type of user submitting a request and determine the level of effort that EPA personnel should expend in helping to effect the information transfer process. Services involving analysis and interpretation, and seminars and demonstrations, as two examples, will require more effort on the part of EPA than, for example, supplying a photocopy of a requested document. The EEITS will be supplied with a decision table to help select an appropriate mode of response for the various categories of users. In addition, a registered list of users, the "User File," will be maintained as a component of the EEITS. A separate record will be generated for each user and his/her information needs, translated into the terminology of the EEITS.

SECTION V. SPECIFICATION OF SYSTEM OPERATIONS (TASK 3)

This section describes the operational details of the EEITS, discussing how the various functions of the system should be performed. This operational design builds upon the functional design which is described in Section IV of this report and illustrated schematically in Figure 5-1.

This section is organized to address all requirements on Task 3, Specification of System Operations, and includes the following:

- Selection of data bases
- Selection of indexing/classification system
- Recommended system outputs
- Procedures for performing system functions

Sample forms and formats are included wherever appropriate.

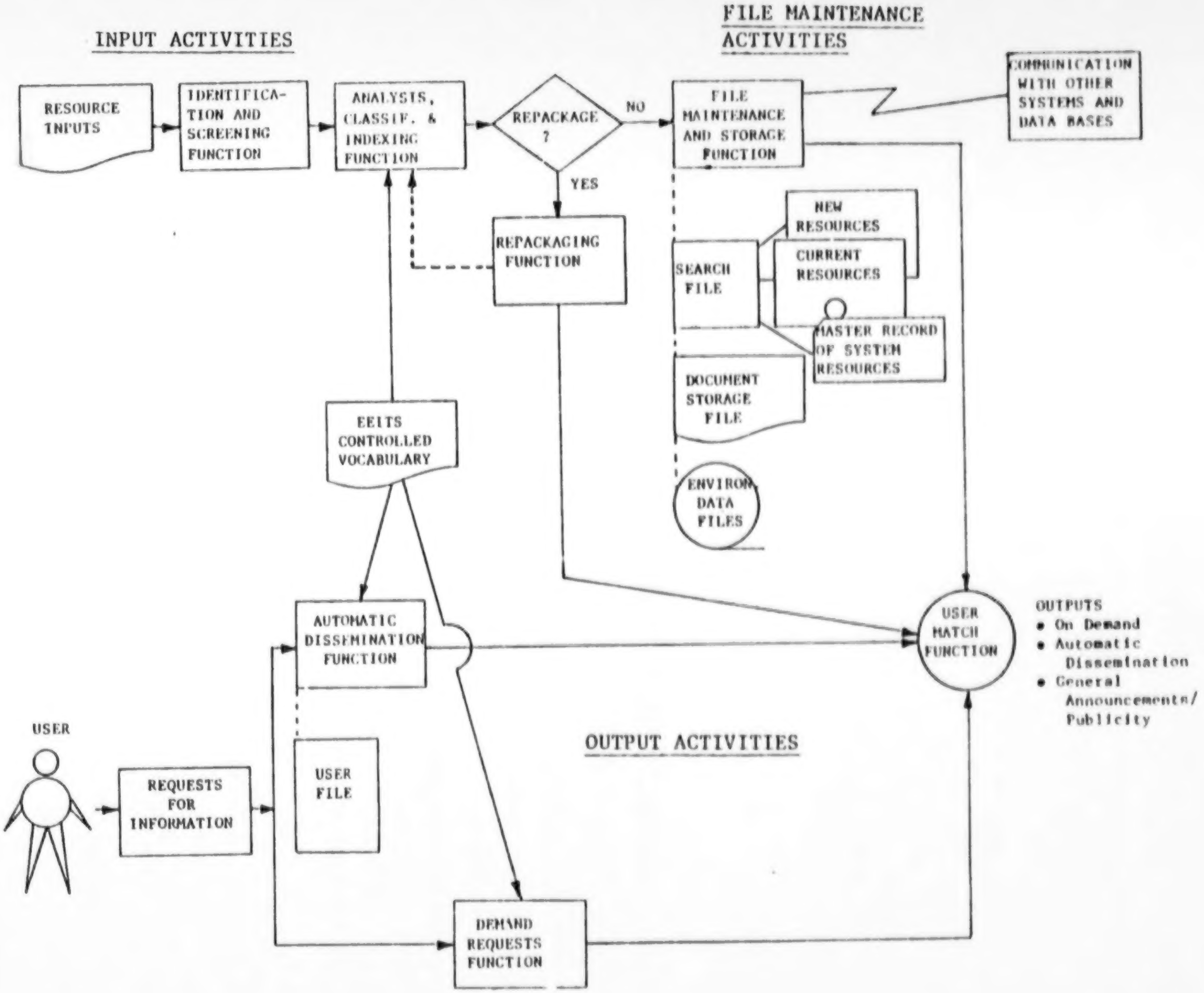
INPUT ACTIVITIES
FILE MAINTENANCE ACTIVITIES
RESOURCE INPUTS
IDENTIFICATION AND SCREENING FUNCTION
ANALYSIS, CLASSIF. & INDEXING FUNCTION
REPACKAGE ?
NO
YES
FILE MAINTENANCE AND STORAGE FUNCTION
COMMUNICATION WITH OTHER SYSTEMS AND DATA BASES
REPACKAGING FUNCTION
SEARCH FILE
NEW RESOURCES
CURRENT RESOURCES
MASTER RECORD OF SYSTEM RESOURCES
DOCUMENT STORAGE FILE
ENVIRON DATA FILES
EEITS CONTROLLED VOCABULARY
AUTOMATIC DISSEMINATION FUNCTION
USER MATCH FUNCTION
OUTPUTS
• On Demand
• Automatic Dissemination
• General Announcements/ Publicity
USER
REQUESTS FOR INFORMATION
USER FILE
OUTPUT ACTIVITIES
DEMAND REQUESTS FUNCTION

Figure 5-1. EEITS System Functions

5.1 SELECTION OF DATA BASES

The recommended EEITS data bases include: (a) index files for facilitating access to information resources and to descriptions of users; (b) document storage files for retaining documents and information for reference; and (c) environmental data files, accessed through the Surveillance and Analysis Division of the EPA Region VIII office. The specific data files described below include:

- EEITS Search File; includes references to:
  - Bibliographic and Audiovisual Materials
  - Energy projects
  - People
  - Events
  - Groups/Systems
- Document Storage File
- Environmental Data Files
- User File

For each file the following information is presented:

- General content/purpose
- Data elements
- Sequence of filing and access points
- Inputs and outputs
- Linkage to other files
- Storage medium
- Illustration of a sample record (if appropriate)
- Volume and growth rate
- Maintenance and update

5.1.1 EEITS Search File (Includes Bibliography File and Energy Projects File)

A. General Content and Purpose

The EEITS Search File is the index to EEITS information resources, and includes the information to be covered by the "Bibliography" file and the "Energy Projects" File as specified in EPA Contract No. 68-01-4697. Altogether, the Search File includes index references to:

- Bibliographic materials (e.g. Technical Reports)
- Audio-visual materials ("A/V")
- Energy projects
- People (technical experts)
- Events (such as workshops, seminars)
- Groups/systems (such as the Denver Regional Energy/Environment Information Center)

The purpose of the Search File is to provide access to these types of information resources, by subject, title, author, etc.

B. Data Elements

The Search File comprises one logical file, although information is included about the six types of resources listed under A. above. However, the data elements present in the file differ slightly, depending on the type of resource. Data elements are listed below for each type of resource.

- Bibliographic and A/V Materials
  - * - EEITS No.: A unique accession number assigned to all resources except events. The general form can be 78-001, 78-002, etc., using a prefix for the year.
  - Resource type: technical report, film, bibliography, etc.
  - * - Title: Title of publication or AV

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* Access point. Other access points may be added if judged relevant to system retrieval

- * - Author: Personal author, if present, last name first
- * - Source: Issuing organization or publisher
- - Date: Date published or issued
- - Length: Pages, if publication. Modify for AV--number of slides, etc.
- * - Report number: For publication, if present
- - Available: Location and/or how to obtain
- - Abstract/Summary: Indicate if present in EEITS
- * - Subjects: Index terms chosen from the EEITS Controlled Vocabulary (see Section 5.2 and Appendix G)
- - Technical level: Technical, Moderately technical, Non-Technical
- - Comments: Enter here any other potentially relevant information, including descriptive data, if needed
- - In EEITS: Date resource is entered into the EEITS
- - Last update: The most recent date that the individual record was updated.

- Energy Projects
  - * - EEITS No.: Same as for bibliographic materials
  - - Resource type: Project
  - * - Name: Title or name of project
  - - Location: Siting of project
  - * - Sponsor: Sponsoring agency
  - * - Govn. sponsor: Principal Federal or State agency involvement
  - - Contact: Person to be contacted for further information, including address and telephone

---

* Access point. Other access points may be added if judged relevant to system retrieval.

* - Subjects
- Comments
- In EEITS
- Last update

} Same as for bibliographic materials

- People, Groups, Systems

  * - EEITS No.: Same as for bibliographic materials

  - Resource type: Person, library, information network, etc.

  * - Name: Person or group name, include title of person

  * - Affiliation: Affiliation of person, including address, organizational sponsor of group or systems (if any)

  - Contact: Preferred method of contacting, e.g., phone, mail, include phone number and address

  * - Subjects
  - Comments
  - In EEITS
  - Last update

  } Same as for bibliographic materials

- Events

  * - Date of event: Date(s) the event will take place. This acts as an accession number, and replaces the EEITS No. in the record.

  - Type of event: Seminar, Workshop, etc.

  * - Title/Name: Name of event

  * - Location: Full address where event is to be held

  * - Sponsoring group or organization, and address

  - Contact: Whom to contact for further information - name address, phone number

  * - Subjects
  - Comments
  - In EEITS
  - Last update

  } Same as for bibliographic materials

---

* Access point. Other access points may be added, if judged relevant to system retrieval.

C. Sequence of Filing and Access Points

Each resource record in the file has as access points all those data elements listed in B. above which are tagged by an asterisk (*). In other words, a technical report which is indexed in the Search File is accessible numerically through its EEITS Number and report number, and alphabetically by title, author, source organization, and subjects. The records sequenced in EEITS number order comprise what is called in library terminology the "shelf list", which is a master list of all acquisitions in accession number order.

D. Inputs and Outputs

The Search File is created in the Analysis, Classification/Indexing and File Maintenance and Storage Functions (see Sections 5.4.2, 5.4.4). Inputs include:

- Resources (or information about resources) to be added to the system.
- Classification and indexing forms and procedures
- The EEITS Controlled Vocabulary (see Section 5.2 and Appendix G)

Outputs may include virtually all system outputs discussed in Section 5.3 which are created by using the Search File to access EEITS resources for information.

E. Linkage to Other Files

The Search File is linked to the Document Storage File by EEITS Number, and linked to the User File by subject terms. The Environmental Data Files are also referenced in the Search File by subject terms. (See Section 5.1.3, 5.4.4 and 5.4.5.)

F. Storage Medium

The EEITS Search File is segmented physically into three subfiles, depending on dates of resource acquisition:

- "New Resources" (records of resources entering the system during the current month).

- "Current Resources" (records of resources entering the system during the current year, prior to the current month.
- Master Record of System Resources (records of all resources which entered the system prior to the current year).

The Current Resources and New Resources segments are stored in the form of index cards (the typical library card catalog) with an individual card for each access point.

The Master Record of System Resources is created by computer from keypunched shelf list cards (see C. above for definition of "shelf list") and takes the form of a computer-printed book catalog.*

G. Illustration of Sample Record

Figure 5-2 illustrates sample catalog cards which typify records in the New Resources and Current Resources Files. Figure 5-3 illustrates a sample page from a prototype for a computer-printed Master Record of System resources.

H. Volume and Growth Rate

The volume of resource inputs is assumed to not exceed 600 items per year, including a maximum of 500 documents (bibliographic materials).*

- New Resources File should not exceed 50 records (600 ÷ 12 months) and 500 index cards (allowing for a maximum of 10 access points per record). There is no growth rate to this file, as it represents only one month's acquisitions.
- Current Resources File should not exceed 600 records (one year's acquired resources) and 6,000 index cards (allowing for a maximum of 10 access points per record.) The file should not exceed this maximum as it represents only one year's acquisitions.
- Master Record of System Resources will begin with one year's holdings (600 records) and increase an average of 600 records per year thereafter.

---

* Catalog in the form of a book; not a catalog of books

** Discussion with Project Officer, January 20, 1978

78-001 Card 2

Report No.: EPA-600/7-78-021
Available Fr. EPA/ORD, Cincinnati, OH 45268
Abstract In EEITS
Subjects: Shale Oil, Solid Wastes, Pollution, Plant Ecology, Colorado

Tech. Level: Moderately Technical
In EEITS: 8/1/78

EEITS No: 78-001 TECHNICAL REPORT

Title: Vegetative Stabilization Of Spent Oil Shales. Vegetation, Moisture, Salinity And Runoff - 1973-1976.
Author: Harbert, H.P.
Source #1 Colorado State University, Dept. of Agronomy, Ft. Collins, CO
Source #2 US EPA/ORD, Industrial Environmental Research Lab, Cincinnati, OH
Date: 2/78 Length: 183p.
(continued)

EEITS No.: 78-010 PAMPHLET

Title: In Productive Harmony; A Brief Explanation of Environmental Impact Statements
Source: US EPA, Office of Public Affairs, Washington, DC
Date: 6/76 Length: 12 p.
Available From Source
Subjects: Environmental Impact Statements
National Environmental Policy Act

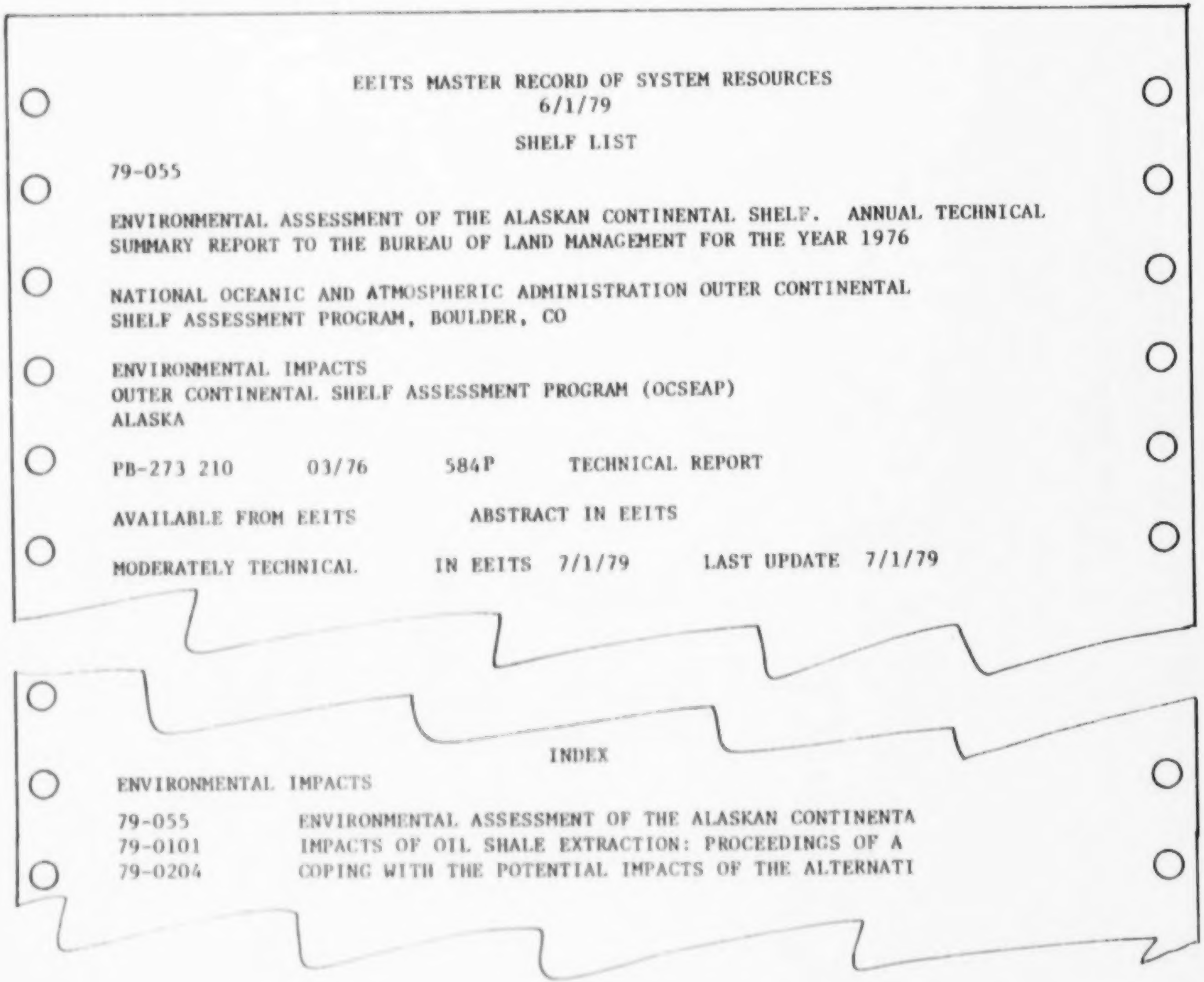
Tech. Level: Non-Technical
In EEITS: 8/3/78

EEITS No.: 78-027 PERSON

Name: Thoem, Terry, Deputy Director, Office of Energy, EPA
Affiliation: US EPA/Region VIII, Office of Energy, Denver, CO
Phone: (303) 837-5914
Subjects: Electric power, Coal, Shale oil, Environmental impacts, Energy/environment research

Tech. Level: Technical
In EEITS: 8/4/78

Figure 5-2. Sample Records - Current Resources and New Resources File



```
                    EEITS MASTER RECORD OF SYSTEM RESOURCES
                                   6/1/79

                                 SHELF LIST
79-055

ENVIRONMENTAL ASSESSMENT OF THE ALASKAN CONTINENTAL SHELF.  ANNUAL TECHNICAL
SUMMARY REPORT TO THE BUREAU OF LAND MANAGEMENT FOR THE YEAR 1976

NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION OUTER CONTINENTAL
SHELF ASSESSMENT PROGRAM, BOULDER, CO

ENVIRONMENTAL IMPACTS
OUTER CONTINENTAL SHELF ASSESSMENT PROGRAM (OCSEAP)
ALASKA

PB-273 210      03/76      584P      TECHNICAL REPORT

AVAILABLE FROM EEITS         ABSTRACT IN EEITS

MODERATELY TECHNICAL      IN EEITS  7/1/79      LAST UPDATE  7/1/79
```

```
                                  INDEX
ENVIRONMENTAL IMPACTS

79-055        ENVIRONMENTAL ASSESSMENT OF THE ALASKAN CONTINENTA
79-0101       IMPACTS OF OIL SHALE EXTRACTION: PROCEEDINGS OF A
79-0204       COPING WITH THE POTENTIAL IMPACTS OF THE ALTERNATI
```

Figure 5-3. Sample Computer-Printed Master Record of System Resources

I. Maintenance and Update

- New Resources File: Maintained and updated by filing new catalog cards produced during current month, estimated maximum of 500 cards to be filed per month. At end of month, cards are refiled in Current Resources File.
- Current Resources File: Maintained and updated by filing previous month's cards from New Resources File, estimated maximum of 500 cards to be filed per month. At end of year, shelf list cards are keypunched as input to the Master Record of System Resources, and remaining cards are discarded.
- Master Record of System Resources: Produced on a yearly basis by adding records keypunched from the shelf list of the previous year's Current Resources File, approximate growth volume of 600 records per year. Also during yearly computer run to produce this file, records are updated and modified to reflect weeding, change in location, etc. of holdings.

5.1.2 Document Storage File

A. General Content and Purpose

The Document Storage File contains the resource inputs which are entered into the EEITS. Typical contents of the file might include:

- Technical reports
- Environmental and energy legislation
- Descriptions of information centers, libraries, and networks
- Brochures advertising a coming conference or workshop
- Curricula vitae of technical experts in energy and environmental areas
- Descriptions of proposed and in-progress energy projects
- Films, slides, microforms

The purpose of the file is to retain these resource inputs in a logical order so they may be accessed quickly through the EEITS Search File, and be available to EEITS personnel for use in providing information to EEITS users.

B. Data Elements

The file itself is comprised of the resource inputs with the added data elements:

- EEITS Number (or in the case of information about events, the event date)
- EEITS identification
- Date entered into the EEITS (date stamp)

C. Sequence of Filing and Access Points

All resource inputs are filed by EEITS Number, except for those involving information about events, which are filed in order of date. This is the only point of access. (The resource inputs can, of course, be accessed at many points through the Search File.)

D. Inputs and Outputs

The file is created as new resource inputs enter the system and are processed. The resources themselves are the outputs, if multiple copies exist in the file; otherwise photocopies are made from the resource inputs for distribution to users.

Other outputs may be created by extracting and synthesizing portions of the resource inputs in the file, as discussed in Section 5.4.3.

E. Linkage to Other Files

The Document Storage File is linked to the Search File by EEITS Number (or, in the case of information about events, a number corresponding to the date of the event).

F. Storage Medium

The resource inputs entered into the Document Storage File are stored in Pendaflex folders in file cabinets (the so-called "vertical file" arrangement).

G. Illustration of Sample Record

Figure 5-4 illustrates the appearance of the file.

H. Volume and Growth Rate

Since the volume of resource inputs is assumed to not exceed 600 items per year, the number of records added to the Document Storage File per year is assumed not to exceed 600 and the entire size of the file will not exceed 1800 records (see I. below). (It is assumed that the Document Storage File will contain some type of record for each resource input entering the system.)

I. Maintenance and Update

The Document Storage File is updated by adding new resource inputs entered into the system. At the end of the first three years of system implementation, the oldest year is weeded and the contents of the file for that year are either:

- Discarded
- Transferred to the EPA Region VIII Library
- Transferred to the Regional Energy/Environment Information Center of the Denver Public Library

Appropriate updates are made in the Search Files reflecting the discarding of resources and change of location. Each year thereafter, the oldest year in the file is weeded in this manner so that the Document Storage File always reflects the most current three years.

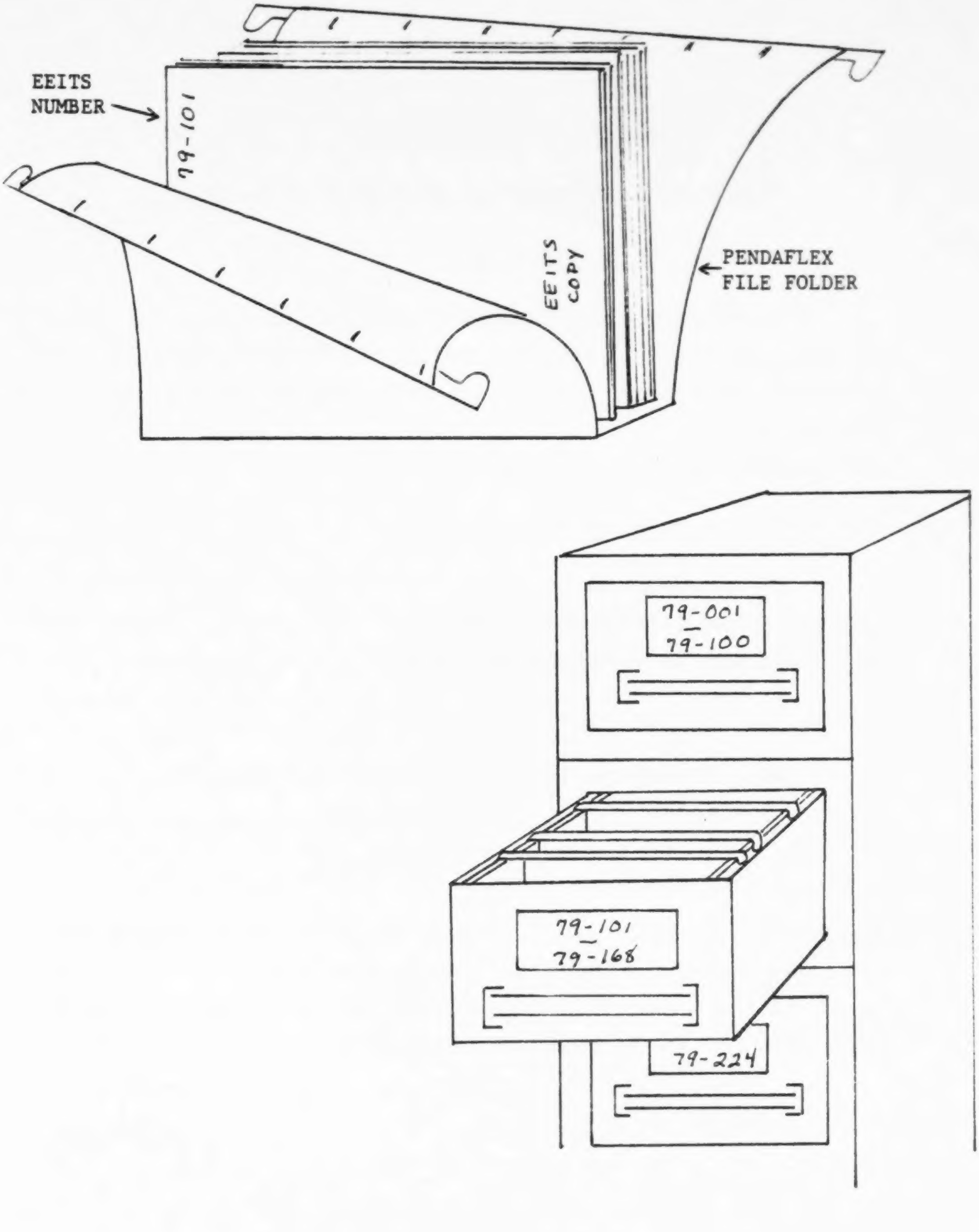

EEITS NUMBER
79-101
EEITS COPY
PENDAFLEX FILE FOLDER
79-001
79-100
79-101
79-168
79-224

Figure 5-4. Document Storage File

5.1.3 Environmental Data Files*

A. General Content and Purpose

The Environmental Data Files to be considered part of the EEITS data bases are STORET (Storage and Retrieval for Water Quality Data) and certain subsystems of AEROS (Aerometric and Emissions Reporting System). STORET contains water quality data taken at specific identified U.S. locations, and data on specific identified municipal waste treatment facilities. AEROS is a complex of data systems and analysis systems which collect, store, analyze and produce reports on various types of pollution data which are collected and reported to EPA by state and local agencies. The subsystems of AEROS available are:

- NEDS (National Emissions Data System) A subsystem of AEROS, which stores and produces reports on the five criteria pollutants (particulates, SO_x, NO_x, CO and hydrocarbons)
- SIP (State Implementation Plan Regulations) A subsystem of AEROS which stores and retrieves the full text of all EPA state air pollution regulations.
- REPS (Regional Emissions Projections System) A subsystem of AEROS which uses the NEDS file of emission data and other input to project probable emissions to the year 2000.
- EHIS (Emissions History Information System) A subsystem of AEROS which produces air pollutant emission estimates when supplied with such data as emission factors, fuels, and control device information.
- WSAP (Weighted Sensitivity Analysis Program) A subsystem of AEROS which uses the NEDS data to compute tolerated variances in emission estimates for each source category.
- HATREMS (Hazardous and Trace Substance Emission System) A subsystem of NEDS which codes and stores for any NED source, non-criteria pollutants.
- CAASE (Computer Assisted Area Source Emissions Gridding System) A subsystem of AEROS which apportions the NEDS county source emission estimates into smaller areas within each county.
- SAROAD (Storage and Retrieval of Aerometric Data) A subsystem of AEROS which stores and analyzes ambient air data collected at nationwide monitoring sites.

---

* Some of the characteristics of the Environmental Data Files have not been made available to AAI, and are not included below. This is because the Environmental Data Files are controlled by another segment of EPA and for the purpose of the EEITS may be considered a "black box".

The purpose of these files is to store, organize, and retrieve water quality and air quality data reported to EPA.

B. Data Elements

The specific data elements for these files have not been made available to AAI.

C. Sequence of Filing and Access Points

This information has not been made available to AAI.

D. Inputs and Outputs

The inputs to and outputs from these files are described in Appendix C., Environmental Data Base Specifications.

E. Linkage to Other Files

A record will be created in the EEITS Search File for each environmental data file: each file will be assigned index terms, so that when environmental data is needed by an EEITS user, an EEITS staff member can consult the Search File and choose the most appropriate environmental data file. Then the staff member contacts the Data Analysis Branch of the Surveillance and Analysis Division of EPA Region VIII: this branch is responsible for conducting searches on environmental data bases. The Data Analysis Branch accesses the data according to the needs of the users, and sends the data to the EEITS who in turn sends it to the user.

F. Storage Medium

All the Environmental Data files exist in machine readable form for utilization by the computer based environmental data systems listed in A. above.

G. Illustration of a Sample Record

H. Volume and Growth Rate

I. Maintenance and Update

This information has not been made available to AAI. File update and maintenance are the responsibility of the personnel at EPA, Research Triangle Park, North Carolina where the environmental data systems are built, updated, and processed by computer.

5.1.4 User File

A. General Content/Purpose

The User File serves as a record for the EEITS of system users and their information needs. Its purpose is to provide access to information about the users in order to match the resources coming into the system with users needing these resources or information about these resources.

B. Data Elements

The following data elements are included in the User File:

- * User number: A unique number identifying each user and assigned sequentially
- Priority: The priority group of the user**
- * Name: Name of individual user, last name first
- Title of individual user
- * Affiliation: Name of agency, department, county, organization to which the individual user belongs
- Organizational subdivision: Subdivision of the affiliation, if relevant

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* Access point

** The basis for assigning users to priority groups is discussed in Section 5.4.6.

- Office address
- Office telephone number
- Interest/background keywords: user's own words describing subjects and formats desired
- * EEITS Subjects: the user's needs translated by EEITS personnel into the EEITS Controlled Vocabulary
- Technical level: Level of technical expertise at which the user prefers to receive information
- Comments
- In EEITS: Date user was first registered with the EEITS
- Last update: Date of last update

C. Sequence of Filing and Access Points

Each user record in the file has as access points all those data elements listed in B. above which are tagged by an asterisk (*). In other words, information about a user is accessible through the name of the user, the user's agency, organization, etc., and the user's subject interests. The records sequenced by user number comprise a master list of users in the order in which they established contact with the EEITS.

D. Inputs and Outputs

The User File is created by EEITS staff utilizing input from users in the form of completed profile forms mailed to the EEITS, and phone conversations between users and EEITS staff. Users' input are solicited at regular intervals so that the profiles comprising the User File may be kept up-to-date.

The User File has no specific output products per se; it is used to match users with resources contained in the Document Storage File.

---

* Access Point

E. Linkage to Other Files

The User File is linked to the EEITS Search File by subject terms: i.e., the same controlled vocabulary is used to describe both EEITS resources and EEITS user needs.

F. Storage Medium

The User File is stored in the form of 8 1/2 x 11" sheets with an individual sheet for each access point. (In other words, the User File functions identically to a "typical card catalog"; however, the records are stored on 8 1/2 x 11" sheets instead of index cards.) The sheets are to be stored in Pendaflex folders in a file cabinet.

G. Illustration of a Sample Record

Figure 5-5 illustrates a sample user profile, which constitutes a record in the User File.

H. Volume and Growth Rate

The initial size of the User File during the first year of operation of the EEITS is estimated not to exceed 400 records,* and, allowing for a maximum of ten access points per record, 4,000 8 1/2 x 11" sheets to be filed.

Thereafter a growth rate of an average of 20 new users per year is estimated, resulting in 20 new records and 200 sheets to be added to the file.

I. Maintenance and Update

The User File is updated by:

- Adding records for new users as they establish contact with the system
- Revising profiles for existing users by contacting them regularly to ascertain changes in their subject interests.

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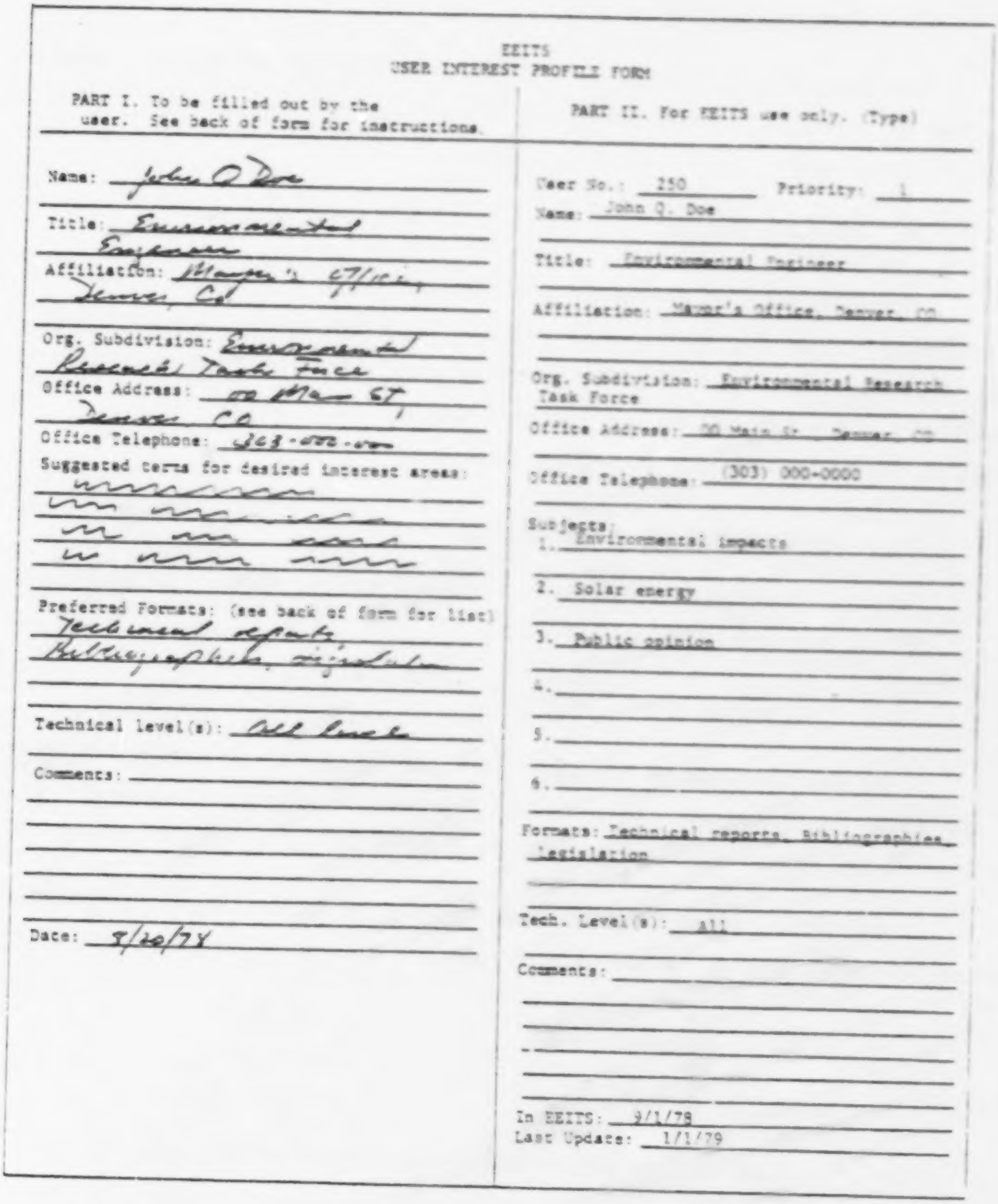
* Discussion with Project Officer, January 20, 1978.



EEITS
USER INTEREST PROFILE FORM

PART I. To be filled out by the user. See back of form for instructions.

Name: John Q Doe

Title: Environmental Engineer

Affiliation: Mayor's Office, Denver, Co

Org. Subdivision: Environmental Research Task Force

Office Address: 00 Main St, Denver, CO

Office Telephone: 303-000-0000

Suggested terms for desired interest areas:

Preferred Formats: (see back of form for list) Technical reports, Bibliographies, legislation

Technical level(s): All levels

Comments:

Date: 9/20/78

PART II. For EEITS use only. (Type)

User No.: 250 Priority: 1

Name: John Q. Doe

Title: Environmental Engineer

Affiliation: Mayor's Office, Denver, CO

Org. Subdivision: Environmental Research Task Force

Office Address: 00 Main St., Denver, CO

Office Telephone: (303) 000-0000

Subjects:

1. Environmental impacts
2. Solar energy
3. Public opinion
4.
5.
6.

Formats: Technical reports, Bibliographies, Legislation

Tech. Level(s): All

Comments:

In EEITS: 9/1/78
Last Update: 1/1/79

Figure 5-5. Sample User Profile Record

- Removing records from the file corresponding to users who no longer wish to use the system.

5.2 SELECTION OF A CLASSIFICATION/INDEXING SYSTEM

An effective indexing and classification system is required for the EEITS to ensure that system resources are described in such a way that they can be matched with users and user needs. The system should also be compatible with existing EPA classifications. AAI's recommended procedures (see Sections 5.4.2 and 5.4.8) require that EEITS resources, accessed through the EEITS Search File, and system users and their interests, accessed through the User File, both be characterized by the same set of key terms. (For a description of the Search File and the User File, see Section 5.1) A list of key terms of this nature is called a controlled vocabulary.

5.2.1 Candidate Controlled Vocabularies

AAI considered several controlled vocabularies for application to the EEITS:

- Environmental Microthesaurus--A Hierarchical List of Indexing Terms Used by NTIS, May, 1977. (PB 265 261)
- Energy Microthesaurus--A Hierarchical List of Indexing Terms Used by NTIS, July, 1976. (PB 254 800)
- Integrated Energy Vocabulary. NTIS, 1976. (PB 259 000)
- A vocabulary developed by AAI during Task I of this project for use in analysis of the user survey data

Since the EEITS is anticipated to be a relatively small system (with accessions of less than 600 new resources per year) the first three options were judged problematical because of their size. (The Environmental Microthesaurus contains 1800 terms, the Energy Microthesaurus 900 terms, and the Integrated Energy Vocabulary 30,000 terms.) When a large vocabulary is used to index a small document set, documents on similar topics may not be grouped under the same terms, as so many fine divisions of subject categories exist in the vocabulary. Moreover, a large controlled vocabulary can be unwieldy to use and to update.

The AAI vocabulary, on the other hand, while of a manageable size (about 80 terms) was developed to represent interests reported in the User Survey Phase of this Contract, and was not compatible with the NTIS terminology which is currently used in indexing EPA technical reports. Thus the use of this vocabulary in the EEITS would create a file that would not mesh with existing EPA indexing practices.

5.2.2 Recommended EEITS Controlled Vocabulary

After consultation with the Project Officer, the following solution was chosen: the AAI vocabulary was revised so that whenever possible, terms from the NTIS Environmental Microthesaurus were used. In some cases, the Environmental Microthesaurus had no term at all for a concept which was in the AAI vocabulary (and which represented a known user interest as reported in the Phase I User Survey). In these cases, the AAI term was retained, but tagged with an asterisk. The resulting controlled vocabulary is recommended for use in EEITS indexing, and is presented in Appendix G.

The characterstics of this EEITS controlled vocabulary are described briefly below.

- Length: 105 terms*, plus provision for proper name terms to be added as appropriate
- Format: Hierarchical arrangement, by subject class, with an alphabetic term index
- Source of concepts: Concepts reported by users in the Phase I User Survey as of interest to them, translated into the terms used in the NTIS Environmental Microthesaurus, and augmented by AAI to provide a more uniform coverage of energy environment subject areas.
- Updating: New concepts, encountered in the course of indexing resources for the EEITS, should be added to the controlled vocabulary after first being translated (if possible) into the NTIS Environmental Microthesaurus terminology.

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*The original list of 77 terms was augmented during the system test.

5.3 RECOMMENDED SYSTEM OUTPUTS

This section describes the end products of the EEITS including recommended outputs and formats based on information determined from analysis of users and user needs as assessed in the Phase I User Needs Survey. For each output is described:

- Purpose
- Content
- Media and format(s)
- Use/distribution (audience, frequency)
- How produced/obtained
- Illustration (if appropriate)

There are two main categories of EEITS outputs: on-demand outputs and proactive outputs. On-demand outputs are produced in response to a specific, usually one time, request from a user. Proactive outputs are produced in advance of user need, either as monthly automatic dissemination of information based on user subject profiles, or as products created to publicize an issue which is judged to be of interest to system users.

5.3.1 On-Demand Outputs

A. Specific Document (or A/V item)

- Purpose: to supply needed documents upon user request
- Content: any subject
- Media and format: print media in any format, e.g., technical report, piece of legislation, published bibliography. (Audiovisual media, e.g., slide shows and films, may also become outputs, probably on a loan basis)
- Use/distribution: sent as response to user request, and sent directly to user to keep (unless a special item or an audiovisual item, which may be loaned rather than given)

- How produced/obtained: Obtained from EEITS document files or photocopied from a master copy in EEITS files, or photocopied from a master copy in the collection of another information center (e.g. Denver Public Library Regional Energy/Environment Information Center).

B. Environmental Data

- Purpose: To supply environmental data to users who request it
- Content: Water quality data, air pollution and air quality data
- Media and format: Print media, computer printout
- Use/distribution: Sent as response to user request, and sent directly to user to keep
- How produced/obtained: User query is relayed to Data Analysis Branch, Surveillance and Analysis Division of EPA Region VIII, where a computer run is done on STORET or one of the AEROS subsystems. A printout is produced off-line which is then mailed to the user.

C. Fact Answer

- Purpose: To answer user's queries and general needs for information in energy/environment subject areas.
- Content: Any subject
- Media and format: Print media (photocopied page(s) of reference, written response), or oral medium (telephone call-back)
- Use/distribution: Upon user request
- How produced: User query triggers search of EEITS files and communication with other sources of information until an answer is found to the query. If the answer is from a printed item, it is photocopied and sent to the user (or read over the phone if a high priority is placed on the query). Otherwise a brief written response may be prepared and sent to the user.
- Illustration: See Figure 5-6 (Shows photocopied pages)

Query: I'd like a brief rundown on the sewage treatment facilities in the energy impacted communities in Utah.

Source of answer: A Report on Regional Profile, Energy Impacted Communities. FEA, Lakewood, CO, 1977.

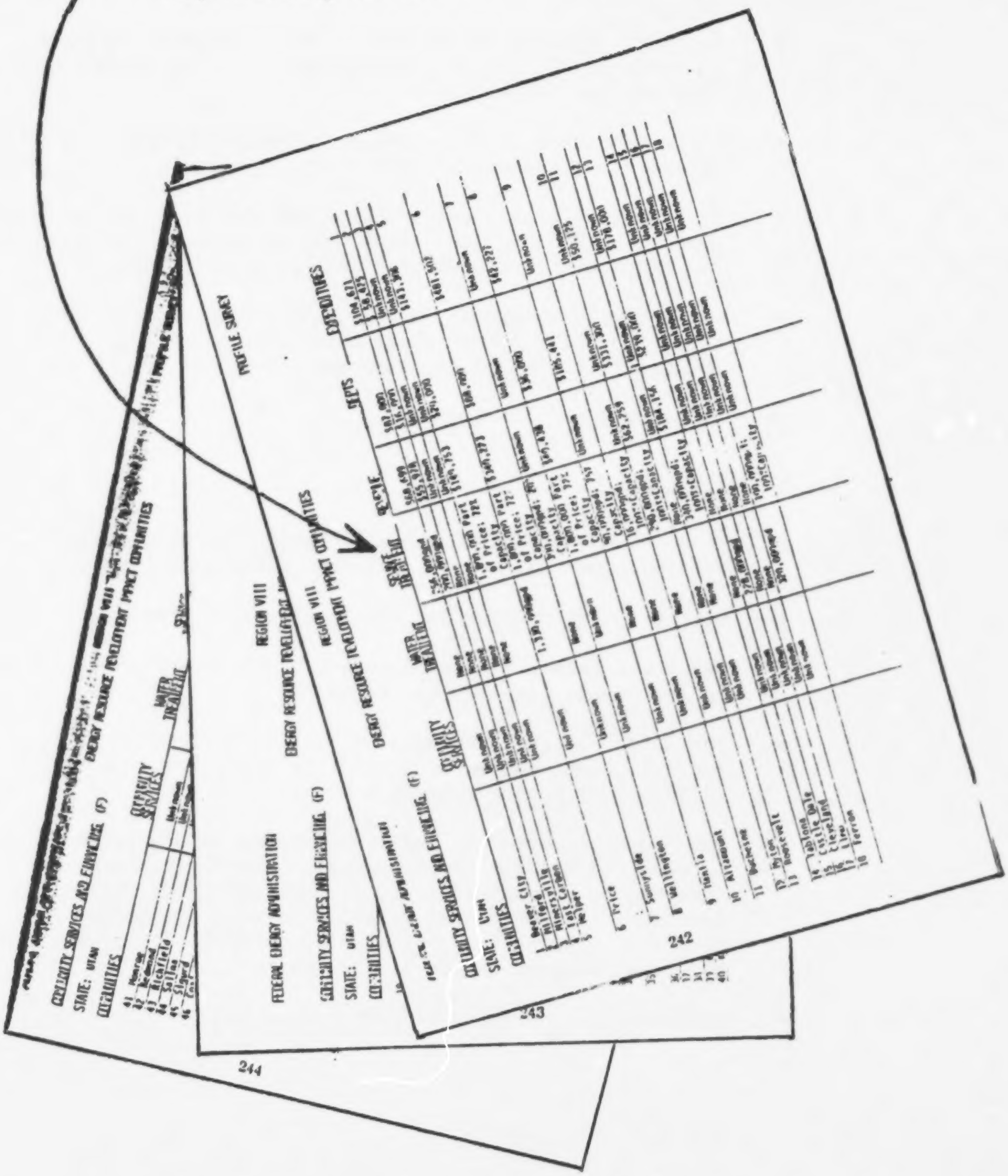


Figure 5-6. Sample Output - Factual Answer

D. References/Referrals (Lists)

- Purpose: To refer users to documents and other resources upon request, or when actual information cannot be provided directly.
- Content: Description of one or more documents, persons, group/systems, with information as to how to obtain/contact (any subject orientation).
- Media and format: Print media; bibliography (with or without abstracts or summaries), directory formats.
- Use/distribution: Sent to user upon request. If subject/query is a popular one, output may be retained and indexed by the EEITS for future distribution to other users.
- How produced/obtained: References/referrals obtained by searching EEITS Search Files which contains descriptions of documents, technical experts, and group/systems.
- Illustration: See Figure 5-7.

E. Interpretations/Syntheses

- Purpose: To provide information which is not readily available per se from an available information source.
- Content: Any energy-environmental subject area.
- Media and format: Printed media, short document of from one to ten pages, prepared by the EEITS.
- Use/distribution: Prepared, on request, for high priority users. May be indexed and entered into the EEITS resource collection if judged of future relevance.
- How produced/obtained: EEITS personnel (with assistance as needed from OEA technical experts) locate references and information on desired topic through the EEITS Search Files and other information systems. Then a custom document is prepared, synthesizing the located information to create a response tailored to the user's query.
- Illustration: See Figure 5-8.

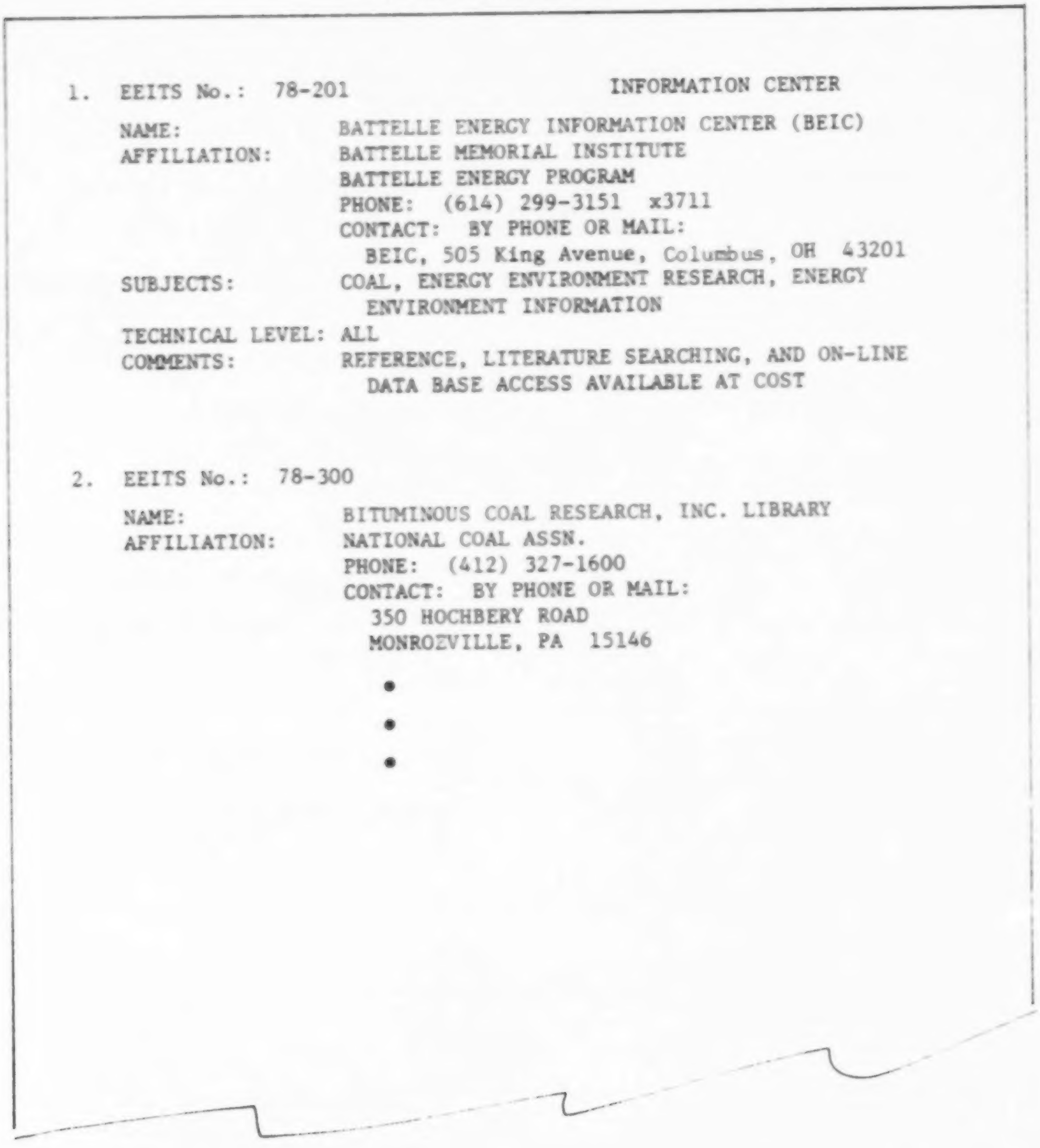
QUERY: A LIST OF TECHNICAL REPORTS ON ENVIRONMENTAL
IMPACTS OF ELECTRIC POWER PLANTS IN UTAH

```
1.  EEITS No.:  78-100                          TECHNICAL REPORT
    TITLE:              ENVIRONMENTAL IMPACT STUDIES OF THE NAVAJO AND
                          KAIPAROWITS POWER PLANTS
    SOURCE:             SEE COMMENTS
                        DATE:  5/73    PAGES:  260
    REPORT No.:         PB-242 846
                        AVAILABLE FROM NTIS
    SUBJECTS:           ENVIRONMENTAL IMPACTS, ELECTRIC POWER, UTAH,
                          NAVAJO INDIANS
    COMMENTS:           PREPARED IN COOPERATION WITH ARIZONA PUBLIC SERVICE
                          COMPANY, PHOENIX, SALT RIVER PROJECT, PHOENIX,
                          ARIZONA, AND BRIGHAM YOUNG UNIVERSITY, PROVO, UTAH.
                          CENTER FOR HEALTH AND ENVIRONMENTAL STUDIES
    TECH. LEVEL:        MODERATELY TECHNICAL
    IN EEITS:           10/1/78       LAST UPDATE:  10/1/78


2.  EEITS No.:  78-101                          TECHNICAL REPORT
    TITLE:              ENVIRONMENTAL STUDIES OF THE KAIPAROWITS GENERATING
                          STATION:  SUPPLEMENTAL REPORT
    SOURCE:             PREPARED IN COOPERATION WITH SOUTHERN CALIFORNIA
                          EDISON COMPANY, LOS ANGELES
                        DATE:  7/74    PAGES:  28
    REPORT No.:         PB-242 844
                        AVAILABLE FROM NTIS
    SUBJECTS:           ENVIRONMENTAL IMPACTS, ELECTRIC POWER, UTAH
    TECH. LEVEL:        MODERATELY TECHNICAL
    IN EEITS:           10/5/78      LAST UPDATE:  10/5/78
```

Figure 5-7. Sample Output - References/Referrals

QUERY: A LIST OF INFORMATION CENTERS
IN THE SUBJECT AREA OF COAL RESEARCH



1. EEITS No.: 78-201 INFORMATION CENTER

NAME: BATTELLE ENERGY INFORMATION CENTER (BEIC)
AFFILIATION: BATTELLE MEMORIAL INSTITUTE
BATTELLE ENERGY PROGRAM
PHONE: (614) 299-3151 x3711
CONTACT: BY PHONE OR MAIL:
BEIC, 505 King Avenue, Columbus, OH 43201
SUBJECTS: COAL, ENERGY ENVIRONMENT RESEARCH, ENERGY ENVIRONMENT INFORMATION
TECHNICAL LEVEL: ALL
COMMENTS: REFERENCE, LITERATURE SEARCHING, AND ON-LINE DATA BASE ACCESS AVAILABLE AT COST

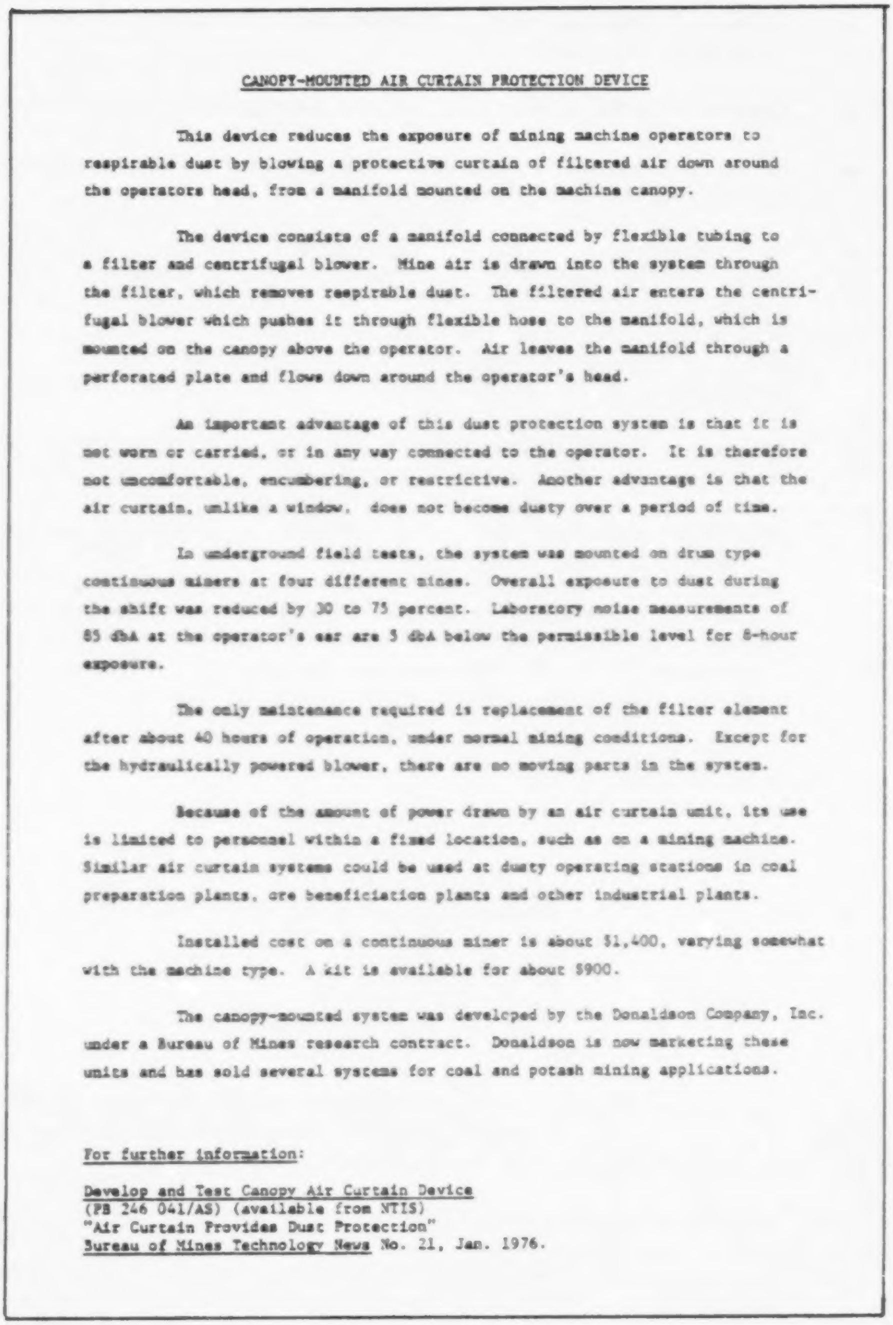
2. EEITS No.: 78-300

NAME: BITUMINOUS COAL RESEARCH, INC. LIBRARY
AFFILIATION: NATIONAL COAL ASSN.
PHONE: (412) 327-1600
CONTACT: BY PHONE OR MAIL:
350 HOCHBERY ROAD
MONROEVILLE, PA 15146

•
•
•

Figure 5-7. (cont'd)

QUERY: PLEASE GIVE ME A BRIEF RUNDOWN ON HOW AN AIR CURTAIN DUST PROTECTION DEVICE WORKS IN PROTECTING MINE WORKERS.



CANOPY-MOUNTED AIR CURTAIN PROTECTION DEVICE

This device reduces the exposure of mining machine operators to respirable dust by blowing a protective curtain of filtered air down around the operators head, from a manifold mounted on the machine canopy.

The device consists of a manifold connected by flexible tubing to a filter and centrifugal blower. Mine air is drawn into the system through the filter, which removes respirable dust. The filtered air enters the centrifugal blower which pushes it through flexible hose to the manifold, which is mounted on the canopy above the operator. Air leaves the manifold through a perforated plate and flows down around the operator's head.

An important advantage of this dust protection system is that it is not worn or carried, or in any way connected to the operator. It is therefore not uncomfortable, encumbering, or restrictive. Another advantage is that the air curtain, unlike a window, does not become dusty over a period of time.

In underground field tests, the system was mounted on drum type continuous miners at four different mines. Overall exposure to dust during the shift was reduced by 30 to 75 percent. Laboratory noise measurements of 85 dbA at the operator's ear are 5 dbA below the permissible level for 8-hour exposure.

The only maintenance required is replacement of the filter element after about 40 hours of operation, under normal mining conditions. Except for the hydraulically powered blower, there are no moving parts in the system.

Because of the amount of power drawn by an air curtain unit, its use is limited to personnel within a fixed location, such as on a mining machine. Similar air curtain systems could be used at dusty operating stations in coal preparation plants, ore beneficiation plants and other industrial plants.

Installed cost on a continuous miner is about $1,400, varying somewhat with the machine type. A kit is available for about $900.

The canopy-mounted system was developed by the Donaldson Company, Inc. under a Bureau of Mines research contract. Donaldson is now marketing these units and has sold several systems for coal and potash mining applications.

For further information:

Develop and Test Canopy Air Curtain Device
(PB 246 041/AS) (available from NTIS)
"Air Curtain Provides Dust Protection"
Bureau of Mines Technology News No. 21, Jan. 1976.

Figure 5-8. Sample Output - Interpretations/Syntheses

F. Visits, Seminars, Workshops

- Purpose: Provide expert counseling in response to an expressed user need.
- Content: Advice/tutorial on any energy/environment topic.
- Media and format: Personal communication (may be augmented by documents, hand-outs, A/V)
- Use/distribution: May be scheduled by EEITS in cooperation with the EPA Region VIII Office of Public Awareness and Intergovernmental Relations (OPAIR), the EPA Office of Energy Activities (OEA) and the Regional Library at the request of a group of high priority users in one geographical area. (See Section 5.4.8 for a discussion of user priority groups)
- How produced/obtained: Exact content and format of such a meeting would depend upon the particular user need as well as the personnel resources available at EPA at the time. A prototype meeting might be planned by a committee consisting of an EEITS staff member, a representative of OPAIR, a representative of the Regional Library and one or more technical experts in the appropriate subject areas from OEA. The committee would plan the meeting including location, date, duration, attendees and program. A decision would be made during the planning whether or not to publicize the meeting to other EEITS users in the nearby geographical area.

5.3.2 Proactive Outputs

A. Documents

- Purpose to provide new documents to users regularly, in the areas of expressed user interest.
- Content : } Same as on-demand output
- Media and format: }
- Use/distribution: Sent monthly to users who have indicated (in their information profiles) that they wish to receive new documents monthly in designated subject areas.
- How produced/obtained: Appropriate documents which match a user's subject interests are selected from the EEITS "New Resources File" section of the EEITS Search File and photocopied.

B. Reference/Referrals (Lists)

- Purpose: To alert users to the most up-to-date resources in subject areas and formats of interest ("Current awareness")
- Content: } Same as on-demand output
- Media and format: }
- Use/distribution:
  - Sent monthly to users who have indicated (in their information profiles) that they wish to receive lists of resources (with or without abstracts/summaries).
  - May be created in response to a new "hot" issue, and sent to users who have indicated interest in that subject area.
  - May be created in response to a new "hot" issue and repackaged into a press release or article submitted to government press, local press, public interest group press.
- How produced/obtained: Citations/referrals to appropriate resources which match the desired subject area(s) are obtained from the EEITS Search File, usually from the "New Resources" section. If abstracts or summaries are desired, they are pulled from document storage (if already in the EEITS) or written from the full document, and photocopied for distribution with the references.
- Illustration: same as on-demand output, Figure 5-7.

C. Interpretations/Syntheses

- Purpose: To alert users to new issues and activities relevant to their stated subject interests.
- Content: } Same as on-demand output
- Media and Format: }
- Use/distribution: Created to publicize a new, important issue, and either sent to users who have indicated interest in that subject area, or repackaged into a press release or article submitted to government press, local press, public interest group press.
- How produced/obtained: Same as on-demand output.
- Illustration: Same as on-demand output, Figure 5-8.

D. Visits, Seminars, Workshops

- Purpose: To keep users informed on the latest issues and activities, and to allow for personal interchange between EPA and Region VIII users.
- Content:
- Media and format:

} Same as on-demand output

- Use/distribution: May be scheduled on a regular basis at key locations within Region VIII (e.g. one meeting in each state per year).
- How produced/obtained: Similar to on-demand output. Topics would vary depending on needs of the geographical area, and which issues EPA wished to promote.

5.4 PROCEDURES FOR PERFORMING SYSTEM FUNCTIONS

This section describes in detail the procedures involved in performing the following EEITS system functions:

- Identification and Screening Function
- Analysis, Classification, and Indexing Function
- File Maintenance and Storage Function
- Repackaging Function
- Communication with Other Systems and Data Bases
- Demand Requests Function
- Automatic Dissemination Function
- User Match Function (Information Retrieval)

The interrelationships of these functions are illustrated graphically in Figure 5-1, presented at the beginning of Section II of this report. Flow charts of the detailed procedural flow within each function are included in Appendix D.

The operational details for each of these functions are discussed in the following format:

- Inputs to each function, including form, format and source.
- Description of procedures, including forms required
- Outputs from each function, including form, format and disposition.

References are made where appropriate to other sections of this report, including: Section 5.1, Selection of Data Bases; Section 5.2, Selection of Indexing/Classification System; and Section 5.3, Recommended System Outputs.

5.4.1 Identification and Screening Function

This function is concerned with the receipt of incoming mail and other communications and information, and the recognition of the relevance of information resources to the EEITS.

A. Inputs

(1) Form and Format

Inputs to the Identification and Screening Function comprise the actual information resource inputs to the EEITS. These inputs may be classified as follows:

- Physical Resources (items which themselves constitute the resources)
    - Documents (any type of printed matter: publications, memos, bibliographies, etc.)
    - Non-print media (slides, micrographics, films, etc.)
- Knowledge Resources (Resources which may be described in the EEITS files, but which, themselves. cannot be physically part of it).
    - People (technical experts, etc.)
    - Groups and systems (information and data systems external to the EEITS, such as the Western Information Network on Energy (WINE) and the Regional Energy/Environment Information Center)

- Events (workshops, seminars, etc.)
- Projects (energy-environment research, energy resource development projects)

(2) Source

Most physical resources will enter the EEITS through the EPA Region VIII mail room, from a variety of source organizations: EPA/ORD/OEMI, Bureau of Mines, Geological Survey, etc. These resources may be directed to the EEITS, the Library, the OEA, or to specific individuals within Region VIII. Other such resources may come directly from individuals, such as when a Region VIII representative attends a meeting or conference and contributes to the EEITS a copy of the proceedings.

Information about potential knowledge resources can enter the system in a variety of ways:

- Through the mail (e.g., a resume of a technical expert, brochure on an information network)
- Personal contacts (e.g., an EPA representative visits a community or goes to a conference and is made aware of a new energy project)
- Input from OPAIR, EPA/HQ, etc.
- Title pages of selected new Library acquisitions, photocopied by Library staff

B. Procedures

(1) Entry of Resource Inputs Through the Mail

In order to maximize the acquisition of relevant information resources for the EEITS, AAI recommends that one person each be designated in the OEA, OPAIR and the Library to screen incoming mail which appears to be of interest to the EEITS.

The staff member scans the mail addressed to the organizational unit or addressed to an individual who has given permission to have mail intercepted for EEITS input, and decides whether or not a given piece of information should be included in the EEITS, using the following criteria:

- Energy-related information
- Environment-related information
- Information about people, events, groups, and organizations in the energy or environment areas
- Information about any Region VIII topic which relates to energy-environment issues (e.g., basic statistics, descriptions of housing and recreational patterns, etc.)

If a piece of mail is not judged relevant, it is allowed to continue to the addressee. If the piece of mail is judged relevant but it is addressed to an individual, identifying information about the item is copied and retained, and the item is allowed to continue to addressee. (This would usually take the form of photocopying the title page of a document, and retaining the photocopy.)

(2) Other Entry

Resource inputs, both physical (documents, A/V) and knowledge-related (information about experts, systems, data bases) can come into the EEITS through personal contacts, etc., as discussed in A. (2) above. These physical resources, and information about the knowledge resources are routed to the desk of the staff member responsible for identification and screening.

(3) Checking for Duplicates

Most physical resources (and some knowledge resources, as judged appropriate) are checked against the EEITS Search File. (see Section 5.1.1 for a description of this file) This procedure identifies duplicate resource inputs at the outset of processing in order to avoid extra work. If a resource input is identified as a duplicate, it may be judged relevant to keep as an extra copy. In this case, the EEITS number of the original is also affixed to the duplicate and the resource input is set aside to be filed in document storage. If the decision is made not to add the duplicate to the EEITS, the item may be returned to donor or allowed to continue to addressee, or discarded, as appropriate. Generally speaking, it is recommended that the lengthier documents be retained in multiple copies for a period of one year, as this reduces photocopying time and costs when such documents are disseminated.

(4) EEITS Resource Input Worksheet

Each resource input to be added to the EEITS must have an EEITS Resource Input Worksheet, which accompanies it throughout processing. Part I (Figure 5-9)* relates to the Identification and Screening Function, and is filled out by the staff member performing this function. The Worksheet is then clipped to the resource (if physical) or the description of the resource (if knowledge-related).

C. Outputs

(1) Resource Inputs Selected for the EEITS

- Form and format: any which are listed under "Inputs" (A. above), each with a Worksheet
- Disposition: Analysis, Classification and Indexing Function.

---

* The entire EEITS Resource Input Worksheet is included in Appendix E.. Throughout the text, subsections of it are presented for illustration purposes.

EEITS RESOURCE INPUT WORKSHEET

PART I. Identification and Screening Date______________ Name______________

1. Type of resource input: Publication______ Group, system, data base______
Audiovisual______ Project, research____________
Person__________ Event______________________
Other____

2. Title/name:____

____

3. General subject area(s):

(a) Energy topics (fuels, technology, conservation, etc.)____________________

(b) Environmental topics (air, water, ecology, sewage/wastes, animal, plant life, etc.)______________

(c) Social/economic issues (population, housing, financial, medical, etc.)____________________

(d) Information about any of the 6 Region VIII states:
Colorado__________ N. Dakota__________ Utah________________
Montana____________ S. Dakota__________ Wyoming______________

(e) Other (describe)____

Figure 5-9. EEITS Resource Input Worksheet, Part I

(2) Duplicate Resources

- Form and format: Printed documents, duplicate descriptions of knowledge resources (e.g., duplicate flyers describing the Western Information Network on Energy, WINE)
- Disposition
  - Duplicates to be added: File Maintenance and Storage Function
  - Duplicates rejected for the EEITS: routed appropriately or discarded.

(3) Items Rejected for the EEITS

- Form and format: any which are listed under "Inputs" (A. above)
- Disposition: routed appropriately or discarded

5.4.2 Analysis, Classification and Indexing Function

This function involves deciding the specific relevance of each resource input to be included in the EEITS for the particular users of the system, and encoding the resources for the EEITS Search File.

A. Inputs

(1) Resource Inputs Selected for the EEITS

- Form and format: any of the following:
  - Documents } "Physical Resources"
  - Non-Print media }
  - Information about
    People
    Groups, Systems, data bases } "Knowledge Resources"
    Events
    Projects

Each resource input has an accompanying EEITS Resource Input Worksheet, Part I

- Source: Identification and Screening Function

(2) Repackaged Outputs Selected for Entry into the EEITS

- Form and format: any described in Section 5.4.4, Figure 5-13, each with a Worksheet
- Source: Repackaging Function

(3) EEITS Controlled Vocabulary

See Section 5.2 for form, format, and source of this controlled vocabulary.

B. Procedures

(1) Relevance Decision

The resource input is scanned and evaluated carefully for its relevance to the EEITS. Specific import of the resource or part of the resource for any part of the Region VIII user community is assessed. (If the resource input is reassessed as non-relevant, it is rejected at this point, and routed or discarded, as appropriate)

(2) Repackaging Decision

The resource input is inspected to determine if an abstract and/or summary is part of the resource. A decision is made whether to extract such an abstract or summary (for possible use as a surrogate or an announcement vehicle) or to create an abstract or summary if one does not exist as part of the resource. Also, its value is assessed as input to an announcement or notification output, either as a unique resource, or as part of a bibliography, set of abstracts, or flyer discussing a specific issue, etc.

(3) Classification/Indexing Decision

In almost all cases, a resource input will be indexed and classified In a few cases, however, the decision may be made to disseminate a resource in some fashion which bypasses this function. (e.g., to send a resource directly to a specific user.)

(4) Need More Information?

In some cases, mainly with knowledge resources, enough information may not be present to integrate the resource into the EEITS (e.g., the title of an upcoming conference; not yet known are the date and place.) In this case a decision is made to write or telephone for more information about the resource. The additional information is then attached to the original information and the Worksheet.

(5) The Worksheet - Part II

Part II of the EEITS Resource Input Worksheet, Figure 5-10, is filled out, documenting the decisions discussed above.

(6) Creation of Citation

Part III of the EEITS Resource Input Worksheet is integral to this and the following step. Figure 5-11 illustrates Part III. To create the citation, an EEITS staff member fills out sections 1, 2, 3 or 4 of Part III, depending on whether or not the resource is a person, group, physical resource or event, leaving the "subject" lines for Step 7. The data elements on Part III of the worksheet correspond to the data elements in the EEITS Search File, and are discussed in Section 5.1.1. Part III of the Form also doubles as a keypunch input form to be used in creating the Master Record of System Resources (See Section 5.4.4.1).

(7) Subject Indexing

Using the EEITS Controlled Vocabulary shown in Appendix G, an EEITS staff member selected up to six terms which describe the resource as specifically as possible. Additional terms for proper names and geographical concepts should also be added as appropriate. The terms are written on the lines labeled "Subject" in Part III of the form.

PART II. Analysis Date__________ Name______________

1. Does resource input belong in EEITS? yes________ no________

2. Are any aspects of special significance to EEITS users--in general, or a specific group? Describe.

____

3. Should resource input be classified/indexed? yes______no_______ (explain, if no)____

4. Should resource input be repackaged into an abstract or summary?
   Abstract/summary may be extracted, pp.:______________________
   Abstract/summary should be created__________________________

5. Should resource input be repackaged into another information product such as a list, synthesis, etc.? ______________________________

____

6. Need more information? yes________ no________

7. Comments:____

____

Figure 5-10. EEITS Resource Input Worksheet, Part II

EEITS RESOURCE INPUT WORKSHEET

Part III. Classification/Indexing Date:__________ Name:______________

1. Information about physical resources (publications and A/V)

EEITS No.: |______|
1 6

Title: |0 1| ____
7 8 9 45

(con't) ____
46 80

(con't) |0 2| ____
7 8 9 45

Author: ____
46 80

Source: (1) |0 3| ____
7 8 9 45

(con't) ____
46 80

(2) |0 4| ____
7 8 9 45

(con't) ____
46 80

Date: |0 5| ____/____ Length: ____________
(mo/yr) 7 8 9 13 31 40

Report No.: ____
42 80

|0 6| Available: ____
7 8 9 45

(con't) ____
46 80

|0 7| Abstract: ____
7 8 9 45

Summary: ____
46 80

Figure 5-11. EEITS Resource Input Worksheet, Part III

Subjects: (1) |0 8| ______________________________
7 8 9 45

(2) ______________________________
46 80

(3) |0 9| ______________________________
7 8 9 45

(4) ______________________________
46 80

(5) |1 0| ______________________________
7 8 9 45

(6) ______________________________
46 80

(Resource type: write in one below)

- Abstract(s)
- Audio tape
- Bibliography
- Directory
- EIS & reviews
- Film
- Guidelines/standards
- Handbook
- Legislation
- Management report
- Microfiche
- Newsletter
- Pamphlet/brochure
- Phono disc
- Regulation
- Slides
- Statistics
- Summary
- Technical data
- Technical report
- Textbook
- Other (specify)

|1 1| ______________________________
7 8 9 45

Tech. Level: ______________________________
46 80

Comments: |1 2| ______________________________
7 8 9 45

(con't) ______________________________
46 80

(con't) |1 3| ______________________________
7 8 9 45

(con't) ______________________________
46 80

In EEITS: |1 4| ___/___/___ **Last Update:** ___/___/___
7 8 9 25 27 42

Location: |1 5| ______________________________
7 8 9 45

____
46 80

Figure 5-11. (continued)

EEITS RESOURCE INPUT WORKSHEET

Part III. Classification/Indexing Date:__________ Name:________________

2. Information about persons, groups, systems, data bases

EEITS No.: ______ 1 6

Name: (include title) 0 1 7 8 9 ________________________________ 45

(con't) 46 ________________________________ 80

(con't) 0 2 7 8 9 ________________________________ 45

(con't) 46 ________________________________ 80

Affiliation: 0 3 7 8 9 ________________________________ 45

(con't) 46 ________________________________ 80

(con't) 0 4 7 8 9 ________________________________ 45

(con't) 46 ________________________________ 80

Contact: 0 6 7 8 9 ________________________ 45

(con't) 46 ________________________________ 80

(con't) 0 7 7 8 9 ________________________________ 45

(con't) 46 ________________________________ 80

Subjects: (1) 0 8 7 8 9 ________________________________ 45

(2) 46 ________________________________ 80

(3) 0 9 7 8 9 ________________________________ 45

(4) 46 ________________________________ 80

Figure 5-11. (continued)

(5) |1 0| 7 8 ______ 9 45

(6) ______ 46 80

(Resource type: write in one below)

Person	Data base
Organization	Other (specify)
Information center/system	

|1 1| 7 8 ______ 9 45

Tech. Level: ______ 46 80

Comments: |1 2| 7 8 ______ 9 45

(con't) ______ 46 80

(con't) |1 3| 7 8 ______ 9 45

(con't) ______ 46 80

In EEITS: |1 4| 7 8 ___/___/___ 9 25 **Last Update:** ___/___/___ 27 42

Location: |1 5| 7 8 ______ 9 45

(con't) ______ 46 80

Figure 5-11. (continued)

EEITS RESOURCE INPUT WORKSHEET

Part III. Classification/Indexing Date:__________ Name:__________________

3. Information about projects

EEITS No.: |______| 1 6

Name: |0 1| 7 8 9 ______________________________ 45

(con't) 46 ______________________________ 80

Location: |0 2| 7 8 9 ______________________________ 45

(con't) 46 ______________________________ 80

Sponsor: |0 3| 7 8 9 ______________________________ 45

(con't) 46 ______________________________ 80

Govn. Sponsor: |0 4| 7 8 9 ______________________________ 45

(con't) 46 ______________________________ 80

Dates of Project: |0 5| 7 8 9 ____________________ 45

Contact: |0 6| 7 8 9 ______________________________ 45

(con't) 46 ______________________________ 80

(con't) |0 7| 7 8 9 ______________________________ 45

(con't) 46 ______________________________ 80

Figure 5-11. (continued)

Subjects: (1) |0 8| ________________________________
7 8 9 45

(2) ________________________________
46 80

(3) |0 9| ________________________________
7 8 9 45

(4) ________________________________
46 80

(5) |1 0| ________________________________
7 8 9 45

(6) ________________________________
46 80

|1 1| PROJECT
7 8 9 15

Comments: |1 2| ________________________________
7 8 9 45

(con't) ________________________________
46 80

(con't) |1 3| ________________________________
7 8 9 45

(con't) ________________________________
46 80

In EEITS: |1 4| ____ / ____ / ____ Last Update: ____ / ____ / ____
7 8 9 25 27 42

Location: |1 5| ________________________________
7 8 9 45

____
46 80

Figure 5-11. (continued)

EEITS RESOURCE INPUT WORKSHEET

Part III. Classification/Indexing Date:__________ Name:______________

4. Information about events (workshops, seminars, etc.)

Date of Event: |______| 1 6
(mo/dy/yr)

Name: |0 1| 7 8 9 ______________________________ 45

(con't) 46 ______________________________ 80

Location: |0 2| 7 8 9 ______________________________ 45

(con't) 46 ______________________________ 80

Sponsor: |0 3| 7 8 9 ______________________________ 45

(con't) 46 ______________________________ 80

(con't) |0 4| 7 8 9 ______________________________ 45

(con't) 46 ______________________________ 80

Dates of Event: |0 5| 7 8 9 ______________________________ 45

Contact: |0 6| 7 8 9 ______________________________ 45

(con't) 46 ______________________________ 80

(con't) |0 7| 7 8 9 ______________________________ 45

(con't) 46 ______________________________ 80

Figure 5-11. (continued)

Subjects: (1) |0 8| ________________________________
7 8 9 45

(2) ________________________________
46 80

(3) |0 9| ________________________________
7 8 9 45

(4) ________________________________
46 80

(5) |1 0| ________________________________
7 8 9 45

(6) ________________________________
46 80

(Resource type: write in one below)

Workshop
Seminar

Conference
Other (specify)

|1 1| ________________________________
7 8 9 45

Tech. Level: ________________________________
46 80

Comments: |1 2| ________________________________
7 8 9 45

(con't) ________________________________
46 80

(con't) |1 3| ________________________________
7 8 9 45

(con't) ________________________________
46 80

In EEITS: |1 4| ____/____/____ **Last Update:** ____/____/____
7 8 9 25 27 42

Location: |1 5| ________________________________
7 8 9 45

(con't) ________________________________
46 80

Figure 5-11. (continued)

(8) Updating the Controlled Vocabulary

If additional subject concepts are needed which are not represented in the controlled vocabulary, a decision is made whether or not to add terms representing such concepts to the vocabulary. Concepts chosen for inclusion should first be translated, if possible, into the terminology used in the NTIS Environmental Microthesaurus (PB 265 261). If the Environmental Microthesaurus has no term representing the needed concept, an appropriate term should be chosen, if possible, from another NTIS indexing tool such as the NTIS Energy Microthesaurus (PB 254 800). If none of the NTIS tools consulted contain a term corresponding to the needed concept, then a term for the concept is chosen by EEITS personnel and added to the vocabulary, prefaced by an asterisk (*).

The new term should be added at an appropriate place in the hierarchy of the controlled vocabulary, and incorporated into the vocabulary's alphabetical term index.

(9) Labeling Resources

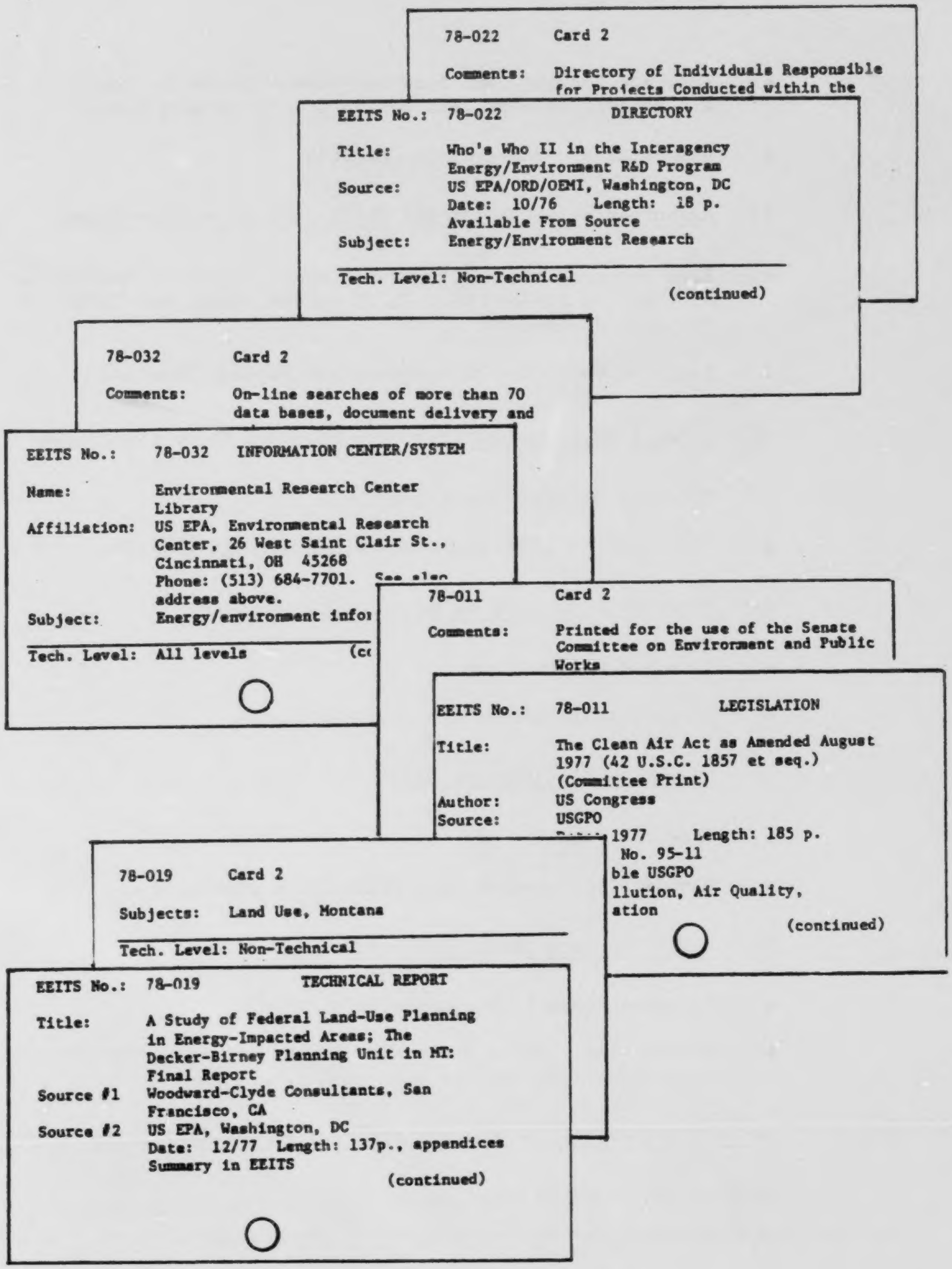
Resources and the information about resources are marked on the outside and inside with the EEITS number, date and EEITS identification. (Information about events is marked with the date, which functions as the EEITS number for this type of resource.)

(10) Production of Catalog Card Masters

Information from Part III of the Worksheet is typed onto catalog cards to produce a catalog card master. Several typical catalog card masters are shown in Figure 5-12. The master card constitutes the shelf list card. The master card is kept with the resource input, which proceeds to repackaging activities if such a decision was made earlier.

C. Outputs

(1) Resource Inputs and Their Card Masters to be Used as Input For Repackaging



78-022 Card 2

Comments: Directory of Individuals Responsible for Projects Conducted within the

EEITS No.: 78-022 DIRECTORY

Title: Who's Who II in the Interagency Energy/Environment R&D Program

Source: US EPA/ORD/OEMI, Washington, DC
Date: 10/76 Length: 18 p.
Available From Source

Subject: Energy/Environment Research

Tech. Level: Non-Technical

(continued)

78-032 Card 2

Comments: On-line searches of more than 70 data bases, document delivery and

EEITS No.: 78-032 INFORMATION CENTER/SYSTEM

Name: Environmental Research Center Library

Affiliation: US EPA, Environmental Research Center, 26 West Saint Clair St., Cincinnati, OH 45268
Phone: (513) 684-7701. See also address above.

Subject: Energy/environment infor

Tech. Level: All levels (c

78-011 Card 2

Comments: Printed for the use of the Senate Committee on Environment and Public Works

EEITS No.: 78-011 LEGISLATION

Title: The Clean Air Act as Amended August 1977 (42 U.S.C. 1857 et seq.) (Committee Print)

Author: US Congress

Source: USGPO
1977 Length: 185 p.
No. 95-11
ble USGPO
llution, Air Quality,
ation

(continued)

78-019 Card 2

Subjects: Land Use, Montana

Tech. Level: Non-Technical

EEITS No.: 78-019 TECHNICAL REPORT

Title: A Study of Federal Land-Use Planning in Energy-Impacted Areas; The Decker-Birney Planning Unit in MT: Final Report

Source #1 Woodward-Clyde Consultants, San Francisco, CA

Source #2 US EPA, Washington, DC
Date: 12/77 Length: 137p., appendices
Summary in EEITS

(continued)

Figure 5-12. Sample Catalog Card Masters

- Form and format: any form and format listed in Section 5.4.1, A. Each is labeled, and has in it its catalog master

- Disposition: Repackaging Function

(2) Resources selected for the EEITS (not to be repackaged)

- Form and format: any form and format listed in Section 5.4.1, A. Each is labeled with EEITS number, date, and EEITS identification.

- Disposition: File Maintenance and Storage Function

(3) Catalog Card Masters (for resources not to be repackaged)

- Form and format: See Figure 5-12

- Disposition: File Maintenance and Storage Function

(4) Resource Inputs not to be Cataloged/Indexed

- Form and format: any

- Disposition: discretion of EEITS staff

(5) Resources Rejected for EEITS

- Form and format: any

- Disposition: routed appropriately or discarded

(6) EEITS Resource Input Worksheets

- Form and format: See Appendix E

- Disposition: Filed for system backup and system monitoring procedures (See Section X of this Report)

5.4.3 Repackaging Function (Includes Abstracting and Synthesis)

Many of the resource inputs which offer useful information to EEITS users may not have wide acceptability and utility in their original form. Repackaging involves taking these resources and creating from them new information products (such as abstracts, bibliographies, and synthesized "fact sheets") which should prove more useful to the customers of the EEITS. These information products are then disseminated to users. They may also be added to the EEITS collection as new resource inputs.

A. Inputs

(1) Resource Inputs and their Card Masters to be Used as Input for Repackaging

- Form and format: any form and format listed in Section 5.4.1, A, each labled with its catalog card master
- Source: Analysis, classification and Indexing Function

B. Procedures

(1) Types of Repackaged Information Products

A wide variety of information products may be created by the EEITS in response to and anticipation of user needs. Types of information products depend upon three sets of parameters:

- Type of resource
- Type of repackaging method
- Type of format and delivery

(b) Type of Repackaging Method

AAI has developed the following classification of repackaging methods:

- Condensation
  An extract or summarization which conveys the content of an information resource in an abbreviated form. Example: abstract, summary.
- List
  An enumeration with or without brief explanatory text, of the names (or other identifying information) of a series of information resources. Example: bibliography, directory.

- Interpretation/Synthesis
  An evaluation or clarification of one or more resources, generally targeted to the specific interests of a user population. Example: discussion of new trends in solid waste processing (citing specific technical reports) relevant to the needs of rural Wyoming.

- Combination
  Two or more of the above methods combined, e.g., a collection of abstracts (list plus condensation)

(c) Type of Format and Delivery

There are many ways information products may be packaged and delivered. The following list encompasses those that should prove of interest to the EEITS:

- Flyer/fact sheet (1 page), single issue, direct mail
- Brochure (<5 pages), single issue, direct mail
- Capsule report (>5 pages), single issue, direct mail
- Newsletter, direct mail
- Press release - to government press, local press, public interest group press*
- Column or short item for column in government press, local press, public interst group press
- Article, written for government press, local press, public interest group press
- Advertisement in government press, local press, public interest group press
- Presentation, face to face (seminar, workshop, lecture)

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* Government press: government agency newsletters, e.g., "EPA-Log"
Local press: newspapers of cities and towns
Public interest group press: newsletters of such groups as The Sierra Club, Montana Wilderness Association, Northern Rockies Action Group, Inc.

These three sets of parameters may be combined to produce a variety of "repackaged" information products. Figure 5-13 presents in chart form 20 such products with types of repackaging, resource, and format and delivery indicated. The first column indicates the type of repackaging used to produce the product: condensation, list, interpretation/synthesis, or combination. The second column indicates the type of resource being repackaged. The third column describes format and delivery mode and the fourth column presents an example of an information product appropriate for the EEITS to produce.

The remainder of this section will describe in general the three types of repackaging methods. More than one type of repackaging may be chosen, of course, for a resource. (e.g., a technical report may be "repackaged" into an abstract, a bibliography and a capsule report of a state-of-the-art of a new technology). Which type(s) of repackaging is chosen may depend upon the following:

- User profiles (described in Section 5.4.7)
- Recent trends in demand requests (Section 5.4.6)
- General awareness on the part of EEITS staff of what new development in the energy - environmental areas might be of interest to whom
- Input from other groups, such as the Office of Public Affairs and Intergovernmental Relations, Office of Energy Activities, the Region VIII Library.

The decision of repackaging type is discussed further in Section 5.4.8.3 in the description of the **User Match Function.**

(2) Condensations

Creating condensations involves the development or extraction of abstracts or summaries from or about a resource. In most cases, these will take the form of creating abstracts or summaries from documents, although condensations may be created about people, projects, groups or events.

TYPE OF REPACKAGING	TYPE OF RESOURCE	FORMAT AND DELIVERY	PRODUCT EXAMPLE
1. Condensation	Document	Flyer, single issue, mail	Technical report abstract
2. Condensation	Document	Flyer, single issue, mail	Technical report executive summary
3. Condensation	Groups/systems/ data bases	Press release to local and public interest press	Description of the EEITS with purpose, functions, and contact point*
4. Condensation	Project	Article, written for local and public interest press	Summary of an important new energy project
5. Condensation	Event	Advertisement in local and public interest press	Description of up-coming EPA-sponsored workshop
6. List	Document	Flyer, single issue, mail	Bibliography of new EEITS acquisitions on a subject**
7. List	Person	Brochure, single issue, mail	Directory of experts on a subject
8. List	Groups/systems/ data bases	Brochure, single issue, mail	List of groups doing research on a subject**
9. List	Project	Press release to local and public interest press	List of energy/projects planned for a given location

*This product should have a high priority

**An illustration of this type of product is shown in Section 2.3, Recommended System Outputs

Figure 5-13. Product Suggestions for EEITS Repackaging

TYPE OF REPACKAGING	TYPE OF RESOURCE	FORMAT AND DELIVERY	PRODUCT EXAMPLE
10. List	Event	Advertisement in local and public interest press	List of seminars planned by EPA on a subject
11. List	A/V	Flyer, single issue, mail	EPA films and slide shows available for loans to groups
12. List	Groups/systems/ data bases	Brochure, single issue, mail	List of E/E data bases available
13. Interpretation/ Synthesis	Document	Article written for local and public interest press	Critical review of the impact of a new technology*
14. Interpretation/ Synthesis	Person	Article written for local and public interest press	Discussion of the contribution of an outstanding individual in an E/E area
15. Interpretation/ Synthesis	Groups/systems/ data bases	Capsule report, direct mail	Discussion and description of various ways E/E information users can obtain information
16. Interpretation/ Synthesis	Project	Newsletter, direct mail	Brief discussion of research trends in a given subject
17. Interpretation/ Synthesis	Event	Article written for local and public interest press	Summary of proceedings and implications of a conference
18. Combination	Document	Capsule report, single issue, mail	Technology state-of-the-art with a short bibliography
19. Combination	Project	Article written for local and public interest press	List of current energy projects in a geographic area with discussion assessing the relative impacts
20. Combination	Document	Newsletter, mail	Collection of abstracts on a subject

*An illustration of this type or product is shown in Section 5.3, Recommended System Outputs

Figure 5-13. (cont'd)

In many cases, a condensation may simply be extracted from the resource. (NTIS - issued technical reports have abstracts in the front, and many technical reports have as Section I an executive summary). Resources from which condensations may be extracted are simply given to a clerk who photocopies the appropriate pages.

Resources from which condensations are to be created "from scratch" are given to a staff member who scans the resource, reads appropriate sections, and writes an original condensation, taking into account EEITS users and appropriate standards.* The condensation is then typed and photocopied.

Condensations are valuable to the EEITS in two ways: first, useful as announcement tools as discussed herein, and second, as part of the permanent file, should the condensation be required for another information product. Therefore, an extra copy of condensations should be made, marked with the same EEITS number as the original resource, and stored with the resource in the EEITS Document Storage File.

(3) Lists

Lists can constitute a major form of announcement in alerting EEITS users as to:

- What resources are available from whom on a given subject
- What new resources have been received by the EEITS
- What energy development projects are about to begin in their geographical area
- What information centers in close proximity can respond to queries on specific subjects
- What experts are willing to provide advice on specific technical subjects

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* e.g., Writing Abstracts. American National Standards Institute, ANSI Z 39.14-1971.

Lists may be compiled on a proactive or on-demand basis. Compiling a proactive list generally involves assembling citations for only the most recent resources of a given type or in a given subject area. The New Resources File of the EEITS Search Files (see Section 5.1.1) contains the most recent materials and may be searched as an aid to compiling a proactive list.

On-demand lists are created in response to a specific need or query of a specific user. Proactive lists may also be compiled for a specific purpose (e.g., a newspaper article citing Federal sources for energy environment information) and may be compiled from any of the EEITS Search Files.

If a list is determined to have a lasting value (e.g., a lengthy bibliography on a specific subject) the decision may be made to enter it into the EEITS as a new resource. In that case, an extra copy is made, and paired with an EEITS Resource Input Worksheet. Part I of the worksheet is filled out and the extra copy proceeds to the Analysis, Classification and Indexing Function.

(4) Interpretations and Syntheses

An interpretation of a resource may be created in the same way as a condensation. The resource input is scanned, appropriate sections are read, and an original piece of writing is produced. An interpretation, however, relates the resource to an issue, another resource(s) or the specific interests of a given group of EEITS users.

A synthesis combines the technique above with that of creating a list: a small group of pertinent resources is assembled and a piece of writing is produced which draws on the various resources, explaining the information and any relevant impacts on EEITS users. These products may be of any length, but those produced by the EEITS would be mostly short (one to ten pages).

If an interpretative or synthesis product is determined to have a lasting value, it may be added to the system as a new resource. An extra copy is made, and paired with an EEITS Resource Input Worksheet. Part I of the worksheet is filled out, and the extra copy proceeds to the Analysis, Classification and Indexing Function.

(5) Combinations

Combination products are developed by combining the methodologies described in (2), (3) and (4) above. In many cases a combination product may be the most effective type of repackaging for a particular user group: a list of resources may be provided for example, with critique and commentary on each.

C. Outputs

(1) Repackaged EEITS Resource Products

- Form and format: Printed condensations, lists, interpretations/ syntheses, combinations.
- Disposition
    - User Match Function
    - Analysis, Classification and Indexing Function, if the decision has been made to add the repackaged product to the EEITS as a new resource

(2) EEITS Resources and Card Masters (which served as input to Repackaging)

- Form and format: any form and format listed in Section 5.4.1, A, each resource labeled, with its catalog card master
- Disposition: File Maintenance and Storage Function

5.4.4 File Maintenance and Storage Function

File maintenance is the function by which information accessible through the EEITS is organized for search and retrieval. The EEITS files comprise four functional files, each with its own role in the system:

- EEITS Search File
- Document Storage File
- Environmental Data Files
- User File

The specifications for these files are described in detail in Section 5.1, Selection of Data Bases. This section addresses the creation and updating of the first three of these files.*

5.4.4.1 EEITS Search File

The EEITS Search File is a tool for comparing descriptions of EEITS resources (created in the Analysis, Classification and Indexing Function) with descriptions of requests for information.

A. Inputs

(1) Catalog Card Masters

- Form and format: See Figure 5-12
- Source:
  - Analysis, Classification and Indexing Function
  - Repackaging Function

---

* Creation and updating of the User File is discussed in Section 5.4.7, Automatic Dissemination Function.

(2) Updates to the Search File

- Form and format: See Figure 5-16
- Source: "Weeding Resources" and "Updating the Master Record of System Resources" procedures, Section 5.4.4.2, B, 2 and 3.

B. Procedures

In this section the component subfiles of the EEITS Search File are listed, followed by a description of the procedures used to create them. The EEITS Search Files consist of the following component subfiles:

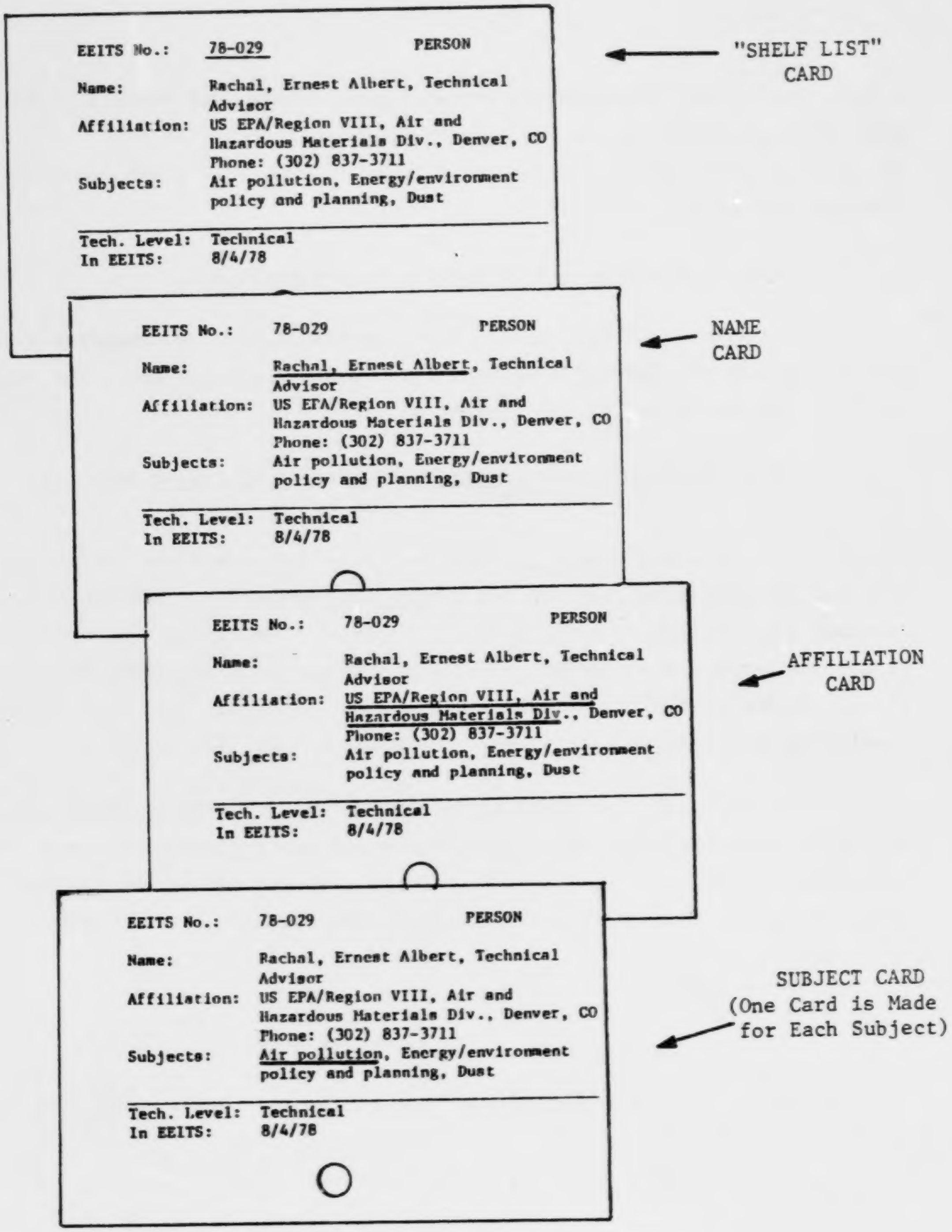
- New Resources File (current month's acquisition, card file)
- Current Resources File (current year's acquisitions, card file)
- Master Record of System Resources (computer printout)

(1) Duplication of Catalog Cards

The catalog card masters are photocopied in sets to produce an individual card for each access point on the card. (Access points for resources are shown in Section 5.1.1, B.) On the individual cards, the access point for that card (also indicating the card's filing location) is underlined manually. Figure 5-14 illustrates a sample set of cards for one resource with the access points tagged. The card masters will have the EEITS number as the access point, producing the master shelf list of all acquisitions.

(2) Creation/Update of New Resources File

The purpose of the New Resources File is to segregate in one file reference to all new resources to be used to create current awareness and notification products. All new cards are filed in this file, with entries under



EEITS No.: 78-029 PERSON
Name: Rachal, Ernest Albert, Technical Advisor
Affiliation: US EPA/Region VIII, Air and Hazardous Materials Div., Denver, CO
Phone: (302) 837-3711
Subjects: Air pollution, Energy/environment policy and planning, Dust
Tech. Level: Technical
In EEITS: 8/4/78

"SHELF LIST" CARD

EEITS No.: 78-029 PERSON
Name: Rachal, Ernest Albert, Technical Advisor
Affiliation: US EPA/Region VIII, Air and Hazardous Materials Div., Denver, CO
Phone: (302) 837-3711
Subjects: Air pollution, Energy/environment policy and planning, Dust
Tech. Level: Technical
In EEITS: 8/4/78

NAME CARD

EEITS No.: 78-029 PERSON
Name: Rachal, Ernest Albert, Technical Advisor
Affiliation: US EPA/Region VIII, Air and Hazardous Materials Div., Denver, CO
Phone: (302) 837-3711
Subjects: Air pollution, Energy/environment policy and planning, Dust
Tech. Level: Technical
In EEITS: 8/4/78

AFFILIATION CARD

EEITS No.: 78-029 PERSON
Name: Rachal, Ernest Albert, Technical Advisor
Affiliation: US EPA/Region VIII, Air and Hazardous Materials Div., Denver, CO
Phone: (302) 837-3711
Subjects: Air pollution, Energy/environment policy and planning, Dust
Tech. Level: Technical
In EEITS: 8/4/78

SUBJECT CARD
(One Card is Made for Each Subject)

Figure 5-14. Sample Catalog Card Set

author, name/title, organization entry, report number, and subject. (Shelf list cards are filed sequentially in one section of the file.) All catalog cards are interfiled and allowed to cumulate in the New Resources File for one month.

(3) Creation/Update of Current Resources File

At the end of each month, the contents of the New Resources File are interfiled with the Current Resources File, which cumulates cards for resources put into the system during the current year.

(4) Creation/Update of the Master Record of System Resources (book catalog* form)

At the end of the year, (or, as an option, every six months) the shelf list for the preceding year (or six months) is keypunched. Section III of the Resource Input Worksheet (Figure 5-11) for those items is used as a keypunch input form. The cards are sorted by computer and merged with any cards from previous years. Then a series of computer sorts are run upon this data base to produce a cumulating book catalog with access as explained under (1) above.

At the same time these merges and sorts are being performed, updates to the catalog regarding change of location and discarding of resources will be keypunched and added. These updates will be prepared within the Document Storage component of the File Maintenance Function (See Section 5.4.4.2, below)

C. Outputs

(1) EEITS Search File: New Resources File

- Form and format: typed and photocopied index cards (See Figure 5-14)
- Disposition: User Match Function

---

*i.e., Catalog in book form

(2) EEITS Search File: Current Resources File

- Form and format: typed and photocopied index cards (See Figure 5-14)
- Disposition: User Match Function

(3) Master Record of System Resources

- Form and format: computer printout (See Figure 5-3)
- Disposition: User Match Function

5.4.4.2 Document Storage File

The role of Document Storage File is to provide a convenient local resource of full-text materials to disseminate to EEITS users upon request or in support of an EEITS Search.

A. Inputs

(1) Resource Inputs Selected for the EEITS

- Form and format: any form and format listed in Section 5.4.1, A, or Figure 5-13
- Source:
  - Analysis, Classification and Indexing Function
  - Repackaging Function

(2) Duplicate Resources

- Form and format: printed documents, duplicate descriptions of "knowledge resources", marked with the same EEITS number as the original copy
- Source: Identification and Screening Function

B. Procedures

(1) Filing Resource Inputs

All inputs at this stage are in the physical form of documents or AV, and all have EEITS numbers: either an accession member or a date (events). All are filed sequentially by number in Pendaflex folders in vertical files (file cabinets).

(2) Weeding Resources

After 3 years of resources have accumulated, the oldest year is weeded. This will then happen every year, so that only 3 years of holdings are retained at any one time. Weeding is done as follows:

- Resources judged not to be of future use to the EEITS are discarded. (This might include descriptions of events which have already happened, drafts of technical reports of which a final version has been issued, etc.)
- Resources duplicating the holdings of the Denver Public Library Regional Energy/Environment Information Center are discarded
- Resources duplicating the holdings of the EPA Region VIII Library are discarded
- Remaining resources are transferred to the collection of EPA Region VIII Library or of the Regional Energy/Environment Information Center

(3) Updating the Master Record of System Resources

When resources are weeded, the Master Record of System Resources must be updated with the new locations of the weeded items.* Part III of the Master Record of System Resources (Figure 5-11) is to be used for this. The EEITS number is entered at the top of the first section. Then the last line of that section, "Location" is completed with one of these new locations, as appropriate:

- Discarded
- In Denver Public Library RE/EIC
- In EPA Region 8 Library

---

* E.g., records for resources duplicating holdings in the RE/EIC will have added a notation "in RE/EIC" or a similar phrase.

These forms are keypunched and used to update the Master Record of System Resources, as discussed in Section 5.4.4.1, B, (4).

C. Outputs

(1) Document Storage Files

- Form and format: resources, labeled with EEITS numbers, filed in Pendaflex folders, stored in file cabinets. ("Vertical file" format)
- Disposition: User Match Function

(2) Updates to the Search File Subfile "Master Record of System Resources"

- Form and format: Keypunched cards
- Disposition: use in updating a subfile of the EEITS Search File. See Section 5.4.4.1, B, (4).

5.4.4.3 Environmental Data Files

The third portion of the EEITS files consists of environmental data files. These will be used exactly as provided by EPA currently, with no modifications. All are stored on the EPA Research Triangle Park, NC computer, and are accessible through EPA Region VIII computer facilities in the Surveillance and Analysis Division, Data Analysis Branch.

A. Inputs

The form, format and source of the environmental data files are discussed in Section 5.1.3, Environmental Data Files and Appendix C. The files available are:

(1) STORET (Storage and Retrieval for Water Quality Data)

(2) AEROS (Aerometric and Emissions Reporting Systems). Subsystems:

- NEDS (National Emissions Data System)
- SIP (State Implementation Plan Regulations

- REPS (Regional Emissions Projections System
- EHIS (Emissions History Information System)
- WSAP (Weighted Sensitivity Analysis Program)
- HATREMS (Hazardous and Trace Substance Emission System)
- CAASE (Computer Assisted Area Source Emissions Gridding System)
- SAROAD (Storage and Retrieval of Aerometric Data)

B. Procedures

(1) Data Files as Integrated into the EEITS Search File

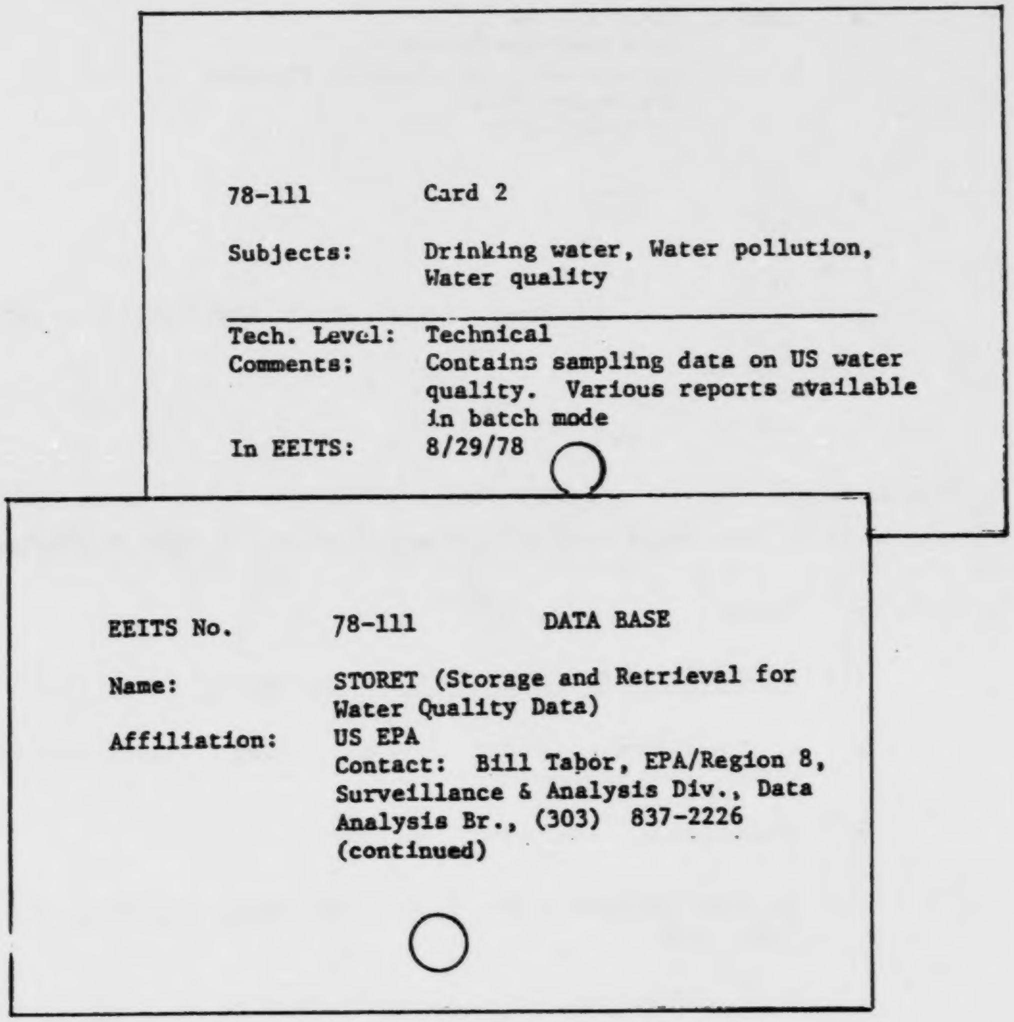
The individual data files listed above should be classified, indexed and entered into the Search File as is done for groups and information systems outside EPA Region VIII. This will facilitate selection of the proper file in responding to a user request. Figure 5-15 shows how catalog cards for these EPA data files might look.

All available relevant documentation (brochures, etc.) about the data files will be kept in document storage under the EEITS number assigned to the record in the Search File.

(2) Accessing the Data Files

As representatives of EPA, the EEITS will serve as an interface between the data files and users. In some cases, a user request or need may be answered by merely sending the computer-printed report; in other cases a brief analysis of the data may be necessary. The EEITS must keep on file the access points for the data files as well as descriptive materials. These access points (as of 5/15/78) are:

- STORET: Bill Tabor
  Data Analysis Branch
  Surveillance and Analysis Division
  EPA Region VIII
  (303) 837-2226



78-111 Card 2

Subjects: Drinking water, Water pollution, Water quality

Tech. Level: Technical

Comments: Contains sampling data on US water quality. Various reports available in batch mode

In EEITS: 8/29/78

EEITS No. 78-111 DATA BASE

Name: STORET (Storage and Retrieval for Water Quality Data)

Affiliation: US EPA

Contact: Bill Tabor, EPA/Region 8, Surveillance & Analysis Div., Data Analysis Br., (303) 837-2226

(continued)

Figure 5-15. Sample Catalog Card Master Referencing EPA Environmental Data File

- AEROS: Barry Levene
  Data Analysis Branch
  Surveillance and Analysis Division
  EPA Region VIII
  (303) 837-2226

- SIP
  REPS
  EHIS
  WSAP
  SOTDAT
  SIEPA
  HATREMS
  CAASE
  SAROAD

  Subsystems of AEROS: same contact point as AEROS

Information about specific capabilities of these data files, to be used to respond to EEITS user needs, may be obtained through the contact points.

C. Outputs

(1) EEITS Search File Records for Environmental Data Files

- Form and format: index cards describing the available data files. See Figure 5-16
- Disposition: User Match Function

(2) Document Storage Files, Containing Information about the Data Files

- Form and format: printed descriptions of the data files; sample printouts
- Disposition: User Match Function

5.4.5 Communication With Other Systems and Data Bases

Interface with other groups, systems and data bases is one of the key features of the EEITS, as such networking represents maximum utilization of already established endeavors with maximum payoffs, with minimum commitment of EEITS resources. Information about groups, systems, and data bases is to be entered into the system as described in the sections on the functions of

Identification and Screening; Analysis, Classification and Indexing; Repackaging; and File Maintenance and Storage. However, because this class of information is so critical to the EEITS, a descriptive overview of the EEITS interface with other groups, systems and data bases is included here.

A. Inputs

Information about other groups, systems and data bases may come to the notice of the EEITS in a variety of ways: flyers and brochures in the mail, personal contacts of EEITS personnel, referrals from other EPA persons. AAI has compiled a descriptive core list of 13 such sources which should be considered as initial inputs. These sources fall into six general types:

- Libraries (primarily depositories, with some information services)
- Libraries/information centers (centers providing full information services and documents as well)
- Bibliographic retrieval systems (systems providing bibliographic information, but no documents)
- Information referral services (systems which refer users to sources of information rather than providing the actual information)
- Information networks (systems which link organizations with mutual information interests, to promote information resource sharing and transfer)
- Community assistance/technology transfer (groups which act as an interface between technology--government R&D efforts and universities--and state and local government planners)

The list of these sources together with sponsor, contact point and description is included in Appendix F.

B. Procedures

(1) Identification and Evaluation

When information about a group, system or data base enters the EEITS, a decision is made whether to include the potential source in the system. Since resources of these types are not physical resources, only information about them (rather than the resources themselves) can be incorporated into the EEITS. Parts I and II of the EEITS Resource Input Worksheet (Figure 5-9 and 5-10) are filled out as for any other resource input. More information is obtained when needed.

(2) Classification/Indexing

Resources of these types are classified and indexed with the EEITS Controlled Vocabulary (Appendix G) as well as are the other resource inputs, and Part III of the Worksheet (Figure 5-11) is filled out. Figure 5-16 shows how catalog cards for an information system and organization might look.

(3) File Maintenance

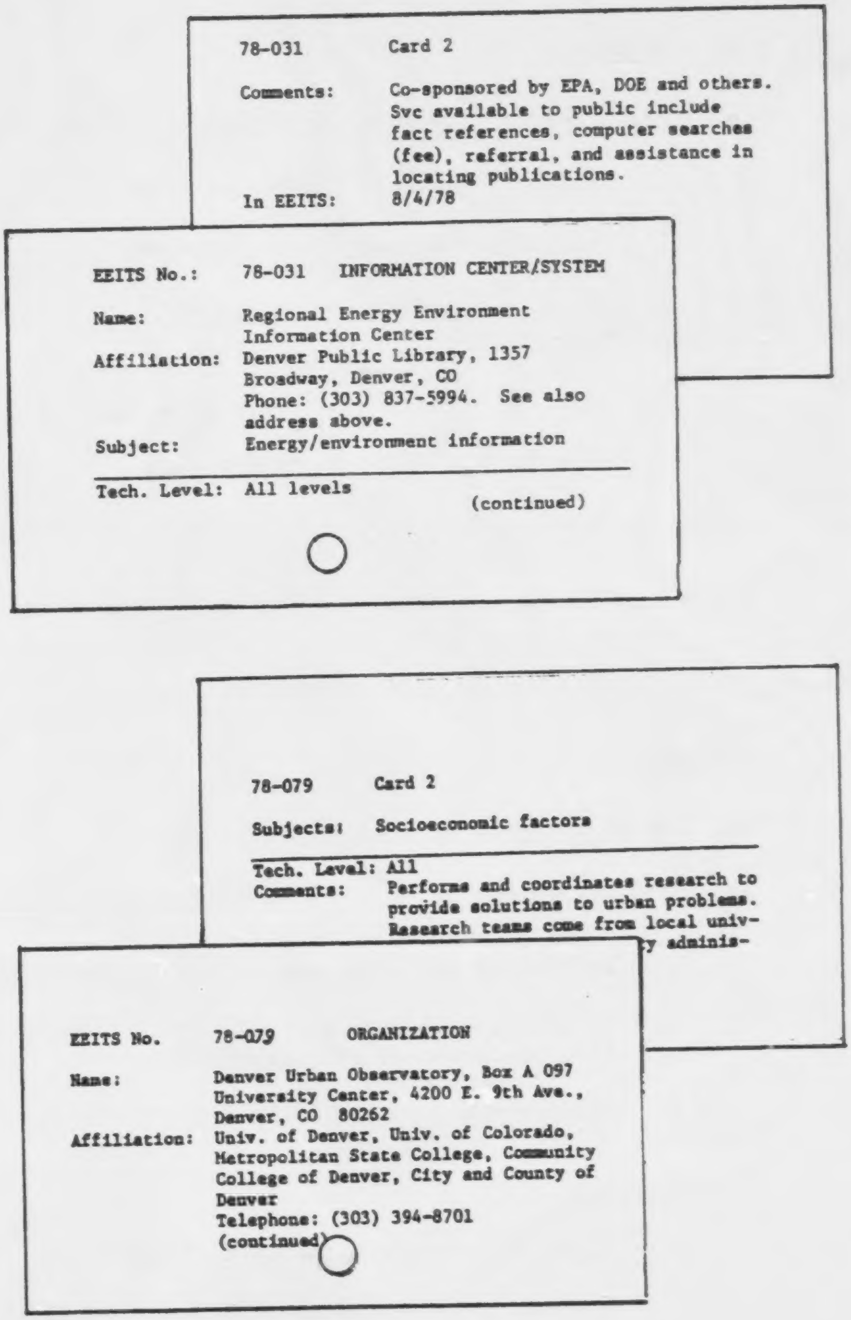
Since groups, systems, and data bases are knowledge resources, the information about the resources is matched with the EEITS number and interfiled with other resources. Cards are interfiled with cards for other resources.

(4) Accessing Groups, Systems, Data Bases

In a few cases, it may only be necessary for an EEITS staff member to refer a user to one of these information sources. In most cases, however, the EEITS will serve as an interface between these outside sources and users. The EEITS must, then develop on-going working relationships with representatives of these resources. Information kept on file (under the EEITS number in the document file) about these resources should, therefore, include:

- Name of specific individual to call or write
- Forms necessary to request information from the resource
- Specific services available and any fees, e.g. on-line searches, referrals to experts, document delivery

This information will facilitate efficient access to these resources, should a user match indicate that such a system or group outside the EEITS can supply information to satisfy the need of an EEITS user.



78-031 Card 2

Comments: Co-sponsored by EPA, DOE and others. Svc available to public include fact references, computer searches (fee), referral, and assistance in locating publications.

In EEITS: 8/4/78

EEITS No.: 78-031 INFORMATION CENTER/SYSTEM

Name: Regional Energy Environment Information Center

Affiliation: Denver Public Library, 1357 Broadway, Denver, CO
Phone: (303) 837-5994. See also address above.

Subject: Energy/environment information

Tech. Level: All levels

(continued)

78-079 Card 2

Subjects: Socioeconomic factors

Tech. Level: All

Comments: Performs and coordinates research to provide solutions to urban problems. Research teams come from local univ-
y adminis-

EEITS No. 78-079 ORGANIZATION

Name: Denver Urban Observatory, Box A 097
University Center, 4200 E. 9th Ave.,
Denver, CO 80262

Affiliation: Univ. of Denver, Univ. of Colorado, Metropolitan State College, Community College of Denver, City and County of Denver
Telephone: (303) 394-8701
(continued)

Figure 5-16. Sample Catalog Card Masters Referencing Information Systems and Organizations

C. Outputs

- EEITS Search File Records Referencing System and Groups
  - Form and format: See Figure 5-16
  - Disposition: User Match Function
- Document Storage Files Containing Information About the Systems and Groups
  - Form and format: printed flyers, brochures, booklets, etc.
  - Disposition: User Match Function

5.4.6 Demand Request Function

The Demand Request Function involves responding to specific, one-time, user queries for information. The role of the function is to structure the request into a formal set of search parameters.

A. Inputs

(1) Demand Requests from Users

- Form and format
  - Written letter from user
  - Telephone call from user (The EEITS should have an in-WATS line to encourage user requests)
  - Walk in visit (most likely from EPA/Region VIII personnel)
- Source
  - Impetus: contact with EPA/EEITS publicity*
  - Impetus: previous experience with EPA/EEITS
  - Impetus: referral to EEITS from another person/information source/group (e.g., WINE)

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* E.g., brochures, articles about the EEITS, etc.; these are outputs of the Repackaging Function. See Section 5.4.3

(2) List of Energy-Impacted Communities

- Form and format: Printed list
- Source: EPA/OEA, updated bi-monthly

B. Procedures

(1) Determine User Priority

As soon as a request enters the EEITS, a decision must be made as to the priority of the user, since EPA cannot expend maximum effort and funds to locate information for all possible persons who might contact the EEITS for information. The level of priority to which a user is assigned determines what level of service s/he will receive in satisfaction of the request for information. (See (3) below) According to the contract, the highest priority is to be given to:

- EPA Region VIII Organizational units
- State and local government agencies with energy or environment regulatory responsibilities

In addition, first priority is also to be given to Indian reservations.*

AAI has developed a prototype decision table for determining the level of priority to be assigned to any given user, depending on the user group and other user characteristics. This table, EEITS Recommended User Priority Decision Table, is shown in Table 5-1. This table may be summarized as follows:

- User Priority Number 1
    - EPA
    - State government groups with energy or environment ("E/E") regulatory responsibility

---

* Discussion with Project Officer, January 20, 1978.

TABLE 5-1 EEITS RECOMMENDED USER PRIORITY DECISION TABLE

	R	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
C1 User = EPA?		Y																	
C2 User = State government?			Y				Y	Y											
C3 User = Local government?				Y	Y				Y		Y								
C4 User = Indian reservation?						Y													
C5 User - Citizen's group?												Y							
C6 User - Industrial group?													Y						
C7 User = University?														Y					
C8 User = "private citizen" or other group										Y					Y				
C9 User group has energy/ environment regulatory responsibility?			Y	Y	-		N				N								
C10 User from energy-impacted community?				-	Y	-			Y	Y	N				N				
C11 User = Library?			N	N	N		N	Y	Y		-			-		Y	N		
C12 User from Region VIII?		Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	N	N		
A1 User = Priority No. 1		X	X	X	X	X													
A2 User = Priority No. 2							X	X	X	X									
A3 User = Priority No. 3											X	X	X	X	X	X			
A4 User = Priority No. 4																	X		

Legend

C = Condition
A = Action
Y = Condition present
X = Action recommended
R = Rule
- = Condition doesn't matter

Read table from top to bottom along R (rule) columns, e.g., R3 states, "if user group is local government, and user group has energy/environment regulatory responsibility, whether or not user is from an energy-impacted community, and user group is not a library, then label the user "priority number 1."

  - Local government groups with E/E regulatory responsibility, or from energy impacted communities*
  - Indian reservations

(All Region VIII)

- User Priority Number 2
  - State government groups without E/E responsibility, and state libraries
  - Local libraries from energy-impacted communities
  - Private citizen or other groups from energy-impacted communities

(All Region VIII)

- User Priority Number 3
  - Local government groups not from impacted Region VIII communities and without E/E responsibility
  - Citizens and public interest groups (Region VIII)
  - Industrial groups (Region VIII)
  - Universities (Region VIII)
  - Private citizens and other groups not from energy-impacted communities (Region VIII)
  - Any library/ information center not in Region VIII
- User Priority Number 4
  - Groups other than libraries which are not in Region VIII

(2) Perform Query Negotiation (If Necessary)

Query negotiation involves contacting the user who is the source of a demand request and inducing him/her to clarify the request. Also at this point the EEITS can suggest possible courses of action to the user based on his/her priority. In other words, the EEITS can let the user know what the EEITS can and cannot do for him/her. The EEITS staff member who is handling the query uses an EEITS Demand Search Request Form (Figure 5-17) to record identifying information and a narrative description of the query, including subjects, formats, geographic limitations and technical level preferred by the user (Part I of the form).

---

* AAI recommends that energy-impacted communities also be given first priority.

(3) Develop Search Strategy

Development of search strategy involves translating the user's query into EEITS terminology and determining the exact limits of potential EEITS effort based on the priority level of the user. First the terminology of the query is translated into the terminology of the EEITS Controlled Vocabulary (Appendix G) and entered on the Demand Request Search Form. Formats, geographic delimiters and technical level(s) desired are also explicitly specified. Then the recommended actions of the prospective search are chosen with regard to user query and user priority and entered on the form (Part II of the form).

AAI has developed a prototype decision table specifying recommended sets of search actions to correspond to levels of user priority. This table is included as Table 5-2. This table may be summarized as follows:

- For User Priority Number 1, the EEITS will, as Appropriate:
  - Locate and supply a reference, document, data referral to expert, or other source of information from the EEITS, or from outside the system if there is little or no system backlog
  - Create and supply interpretations/syntheses
  - Arrange visits/seminars and factor user into existing visit/seminar schedule
- For User Priority Number 2, the EEITS will as Appropriate:
  - Locate and supply a reference, document in the EEITS files, fact answer, referral to expert, or other source of information
  - Factor user into existing visit/seminar schedule

EEITS DEMAND REQUEST SEARCH FORM

PART I. User-Supplied Information Date ________ Name ________________

Date of request: ________________

Requestor name: ________________

Title: ________________

Affiliation: ________________

Org. subdivision: ________________

Office address: ________________

Office telephone: ________ Priority: ________

Narrative description of query: ________________

____

____

PART II. Search Strategy

Subject terms: ________________

____

Formats: ________________

Technical level(s): ________________

Action directive: Supply item/information ________________

Supply reference/referral ________________

Perform analysis/interpretation ________________

Arrange visit/seminar ________________

Comments: ________________

____

PART III. Search Results

Date completed: ________________

Action directive successful (describe) ________________

Other action taken (describe) ________________

____

Comments: (solicit and include comments from user) ________________

____

Figure 5-17. EEITS Demand Request Search Form

TABLE 5-2 EEITS SEARCH PARAMETERS DECISION TABLE

R	1	2	3	4	5	6	7	8
C1 User = Priority 1?	Y	Y						
C2 User = Priority 2?			Y	Y				
C3 User = Priority 3?					Y	Y		
C4 User = Priority 4?							Y	Y
C5 Is there a system backlog?	N	Y	N	Y	N	Y	N	Y
A1 Locate and supply reference, location of document, AV	X	X	X	X	X	X	X	X
A2 Locate and supply document, AV in EEITS file	X	X	X	X	X			
A3 Locate and supply document, AV from sources other than EEITS	X							
A4 Locate and supply data	X	X	X					
A5 Locate and supplv fact answer	X	X	X	X	X	X	X	
A6 Locate and supply referral to technical expert	X	X	X	X	X			
A7 Locate and supply referral to other source (group, system)	X	X	X	X	X	X	X	X
A8 Create and supply interpretations/ syntheses	X	X	X					
A9 Arrange visit/seminar	X	X	X					
A10 Factor into EPA existing visit/seminar schedule	X	X	X	X	X			

  - Supply services accorded to Priority Number 1 users if there is little or no system backlog

- For User Priority Number 3, the EEITS will, as Appropriate:
  - Locate and supply a reference, fact answer, referral to other source of information
  - Supply Services accorded to Priority Number 2 Users if there is little or no system backlog

- For User Priority Number 4, the EEITS will, as Appropriate
  - Locate and supply a reference, referral to other source of information
  - Supply services accorded to Priority Number 3 users if there is little or no system backlog

(This table specifies the limits of searches, that is, if a query from a Priority Number 1 user may be answered by supplying a reference to a document, the EEITS need do nothing further. However, should greater effort be necessary, the EEITS will perform all the actions listed above to satisfy the user.)

C. Outputs

(1) Demand Request Search Form

- Form and format: See Figure 5-17. Parts I and II of the form are filled out
- Disposition: User Match Function

5.4.7 Automatic Dissemination Function

This function allows the user to submit a "standing order" to receive information on specific subjects (and in specific formats) which comes into the EEITS, on a current basis. This mode of information delivery utilizes what is called a "profile"*, which is a formal description of a user and his/her needs couched in terms from the EEITS Controlled Vocabulary.

---

* The full set of profiles constitute the records from which the User File is produced. See Section 5.1.4.

A. Inputs

(1) Requests for Automatic Dissemination Service

- Form and format
  - Written letter from user
  - Telephone call from user
  - Walk in visit (most likely from EPA/Region VIII personnel)
- Source
  - Impetus: Contact with EPA/EEITS publicity or solicitation
  - Impetus: previous experience with EPA/EEITS
  - Impetus: Referral to EEITS from another person, or group/information source (e.g., the Denver Public Library Regional Engery/Environment Information Center)

B. Procedures

(1) Determine User Priority.

It is unlikely, at least for the first several years of EEITS existence, that the EEITS will have the time and personnel to provide automatic dissemination services to all prospective system users. Therefore, AAI recommends that the EEITS provide this service for Priority Level 1 users only. (At regular periods the service load will be evaluated and decision made whether or not to extend the service to other priority levels of users. This procedure is discussed in Section X of this Report, Monitoring, Evaluation and Accounting Procedures.)

The decision table shown in Table 5-1 indicates which users fall into the Priority Number 1 class. These are:

- EPA Region VIII
- State government groups with energy or environment ("E/E") responsibilities

- Local government groups with E/E regulatory responsibility
- Local government groups from energy-impacted communities
- Indian reservations

If a requestor for automatic dissemination does not fall into the Priority Number 1 class, the EEITS will respond with a form letter (or phone call) stating the priorities of the EEITS and offering the requestor other EEITS services.

(2) Send Profile Form to User

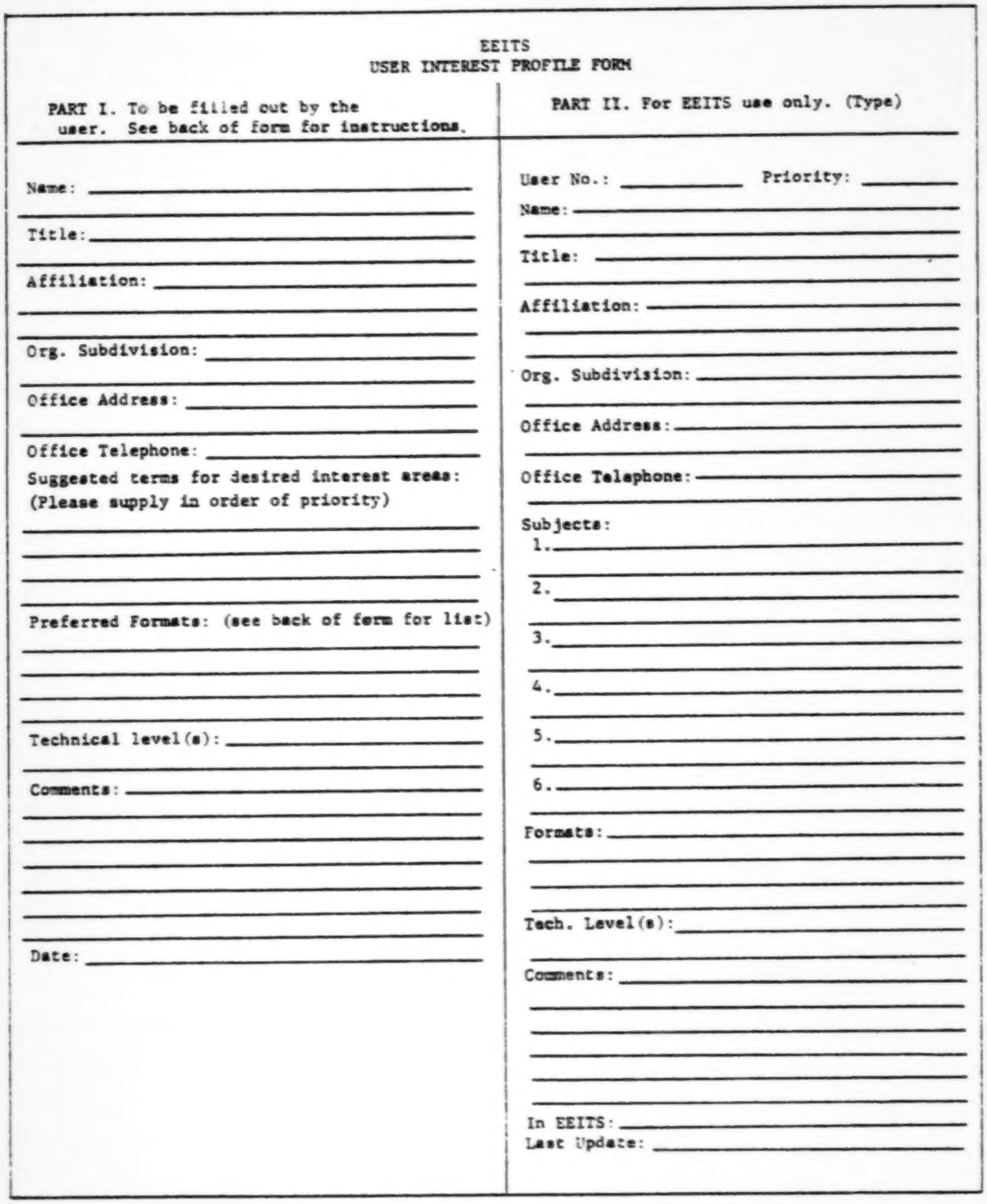
Figure 5-18 illustrates a sample profile form. The left hand side of the front of the form is to be filled out by the user; the back of the form gives instructions, including a list of possible formats. This form is sent to the user so that s/he may complete Part I. (If a request comes over the telephone and there is no system backlog, an EEITS staff member can fill this side out as the user dictates the information over the telephone.)

(3) Negotiate Query With User

When the Profile Form is returned, it is examined by an EEITS staff member. If parts of the form are incomplete or unclear the user is contacted by telephone so that the Profile Form can accurately reflect his/her needs and preferences.

(4) Complete Profile Form

After query negotiation is complete, an EEITS staff member completes Part II of the form. This involves translating the user's stated need into the terms of the EEITS Controlled Vocabulary shown in Appendix G. This part of the form should be typed in. Also added are the date the profile is entered into EEITS. If the profile is being revised, the date of the revision is added in after "last update". A sequential number is assigned to the user and added after "User Number".



EEITS
USER INTEREST PROFILE FORM

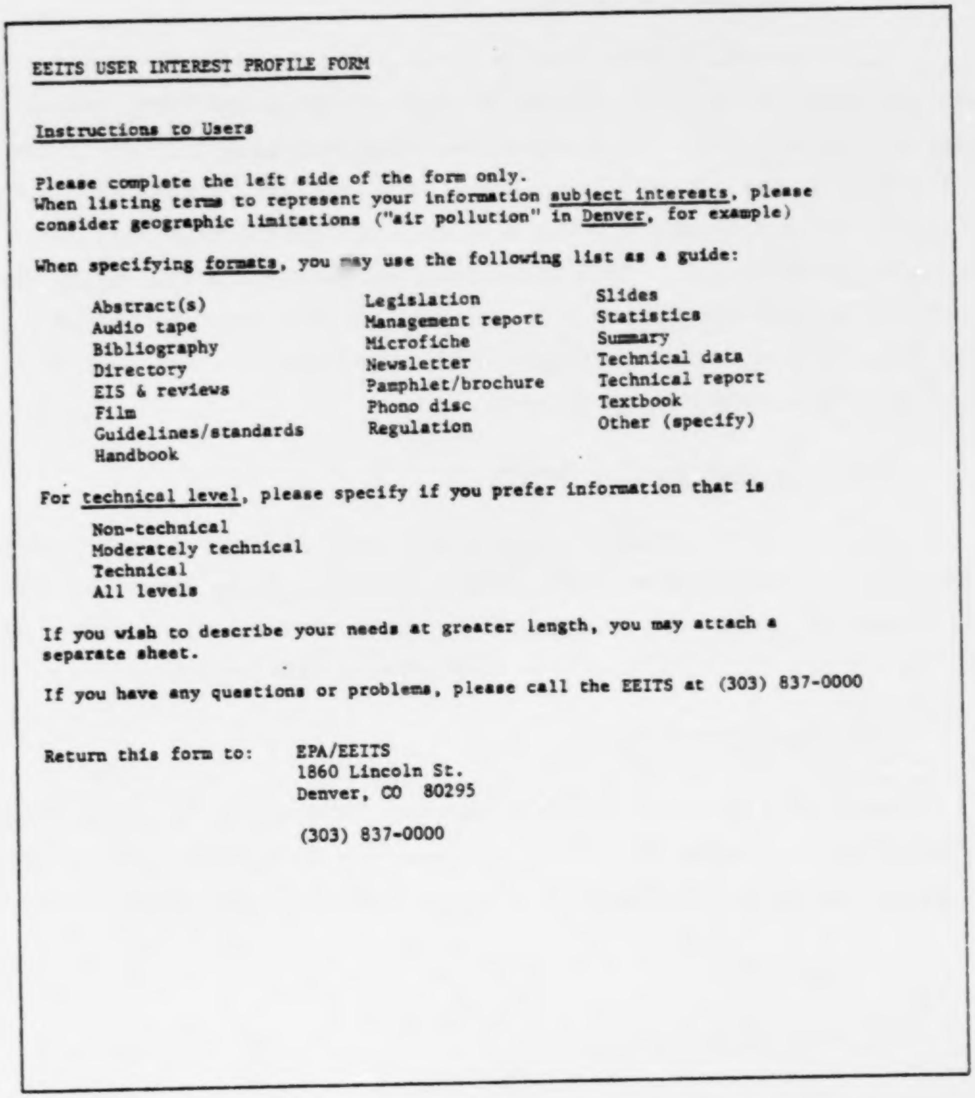
PART I. To be filled out by the user. See back of form for instructions.

Name:
Title:
Affiliation:
Org. Subdivision:
Office Address:
Office Telephone:
Suggested terms for desired interest areas: (Please supply in order of priority)
Preferred Formats: (see back of form for list)
Technical level(s):
Comments:
Date:

PART II. For EEITS use only. (Type)

User No.:
Priority:
Name:
Title:
Affiliation:
Org. Subdivision:
Office Address:
Office Telephone:
Subjects:
1.
2.
3.
4.
5.
6.
Formats:
Tech. Level(s):
Comments:
In EEITS:
Last Update:

Figure 5-18. EEITS User Profile Form (Side 1)



EEITS USER INTEREST PROFILE FORM

Instructions to Users

Please complete the left side of the form only.
When listing terms to represent your information subject interests, please consider geographic limitations ("air pollution" in Denver, for example)

When specifying formats, you may use the following list as a guide:

- Abstract(s)
- Audio tape
- Bibliography
- Directory
- EIS & reviews
- Film
- Guidelines/standards
- Handbook
- Legislation
- Management report
- Microfiche
- Newsletter
- Pamphlet/brochure
- Phono disc
- Regulation
- Slides
- Statistics
- Summary
- Technical data
- Technical report
- Textbook
- Other (specify)

For technical level, please specify if you prefer information that is

- Non-technical
- Moderately technical
- Technical
- All levels

If you wish to describe your needs at greater length, you may attach a separate sheet.

If you have any questions or problems, please call the EEITS at (303) 837-0000

Return this form to:

EPA/EEITS
1860 Lincoln St.
Denver, CO 80295

(303) 837-0000

Figure 5-18. (con't)
EEITS User Profile Form (Side 2)

(5) Duplicate Profile Form

The completed Profile Form is used to create the User File in the same way the typed catalog card master is used to create the EEITS Search File (see Section 5..4.4.1). Photocopies are made from side 1 of the form: a copy for each of the access points: name of user, affiliation, each subject term entered. (see Section 5.1.4 for a description of the User File data elements and access points.) When the copies are made the access point for each sheet (also indicating the filing location of that copy) is marked manually with a check or arrow. Figure 5-19 illustrates a sample set of copies of a profile referencing one user.

(6) File User Profile Sheets

The copies of the user profiles are interfiled to produce a sort of "card catalog" of profile forms. The original profile forms are filed under the user number to create a "shelf list", or master file of all profiles in the system. Sheets are filed in pendaflex folders in a file cabinet.

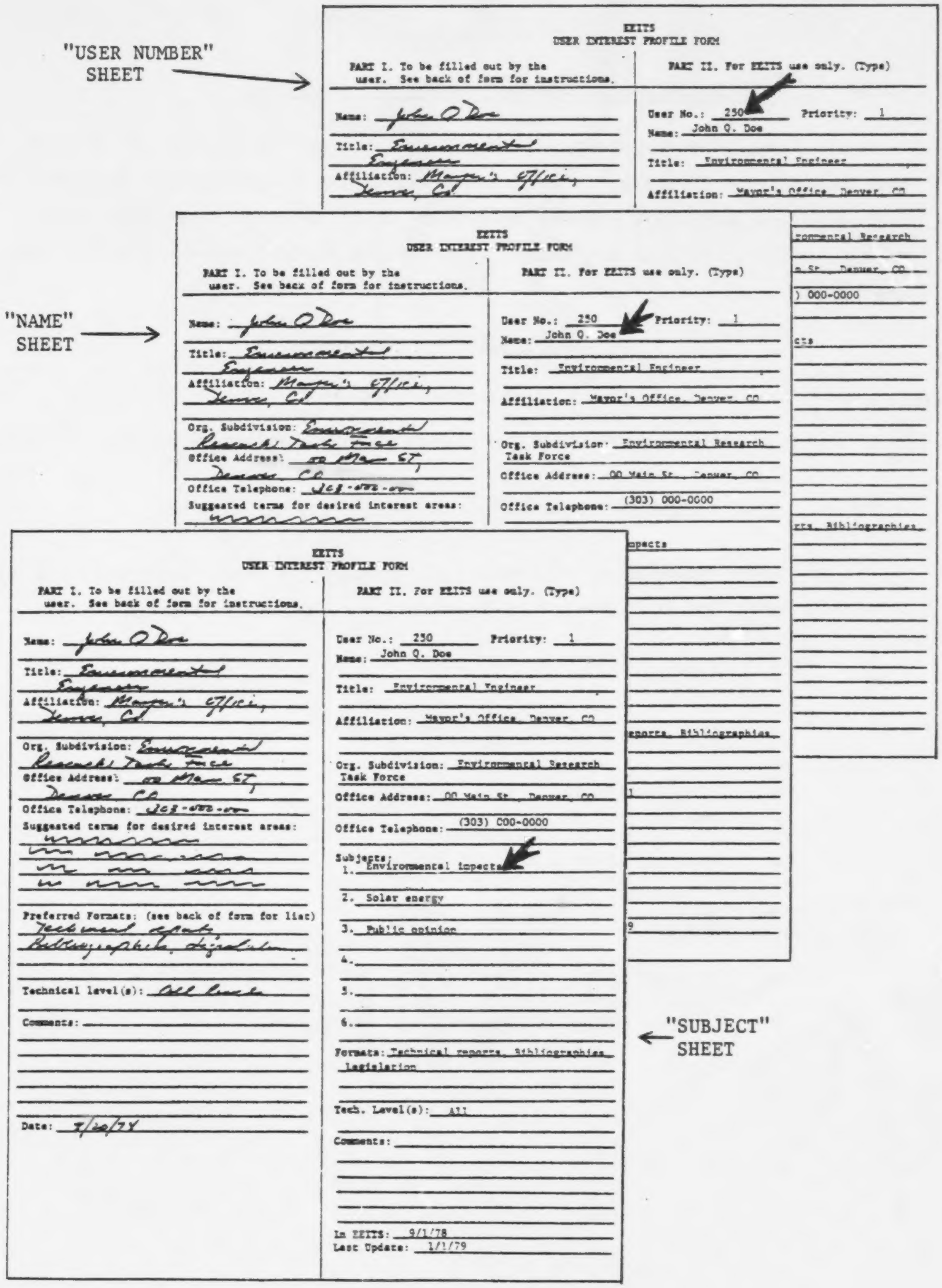
(7) Profile Maintenance

Users with profiles in the EEITS User File are to be contacted at regular intervals to ensure that their profiles are up-to-date. AAI recommends that users be contacted an average of twice a year to ensure profile currency.

C. Outputs

(1) The EEITS User File

- Form and format: See Figure 5-18 and 5-19; also Section 5.1.4
- Disposition: User Match Function


"USER NUMBER" SHEET

"NAME" SHEET

"SUBJECT" SHEET

EEITS
USER INTEREST PROFILE FORM

PART I. To be filled out by the user. See back of form for instructions.

Name: John Q Doe

Title: Environmental Engineer

Affiliation: Mayor's Office, Denver, Co

PART II. For EEITS use only. (Type)

User No.: 250 Priority: 1

Name: John Q. Doe

Title: Environmental Engineer

Affiliation: Mayor's Office, Denver, CO

EEITS
USER INTEREST PROFILE FORM

PART I. To be filled out by the user. See back of form for instructions.

Name: John Q Doe

Title: Environmental Engineer

Affiliation: Mayor's Office, Denver, Co

Org. Subdivision: Environmental Research Task Force

Office Address: 00 Main ST, Denver CO

Office Telephone: 303-000-0000

Suggested terms for desired interest areas:

PART II. For EEITS use only. (Type)

User No.: 250 Priority: 1

Name: John Q. Doe

Title: Environmental Engineer

Affiliation: Mayor's Office, Denver, CO

Org. Subdivision: Environmental Research Task Force

Office Address: 00 Main St., Denver, CO

Office Telephone: (303) 000-0000

EEITS
USER INTEREST PROFILE FORM

PART I. To be filled out by the user. See back of form for instructions.

Name: John Q Doe

Title: Environmental Engineer

Affiliation: Mayor's Office, Denver, Co

Org. Subdivision: Environmental Research Task Force

Office Address: 00 Main ST, Denver CO

Office Telephone: 303-000-0000

Suggested terms for desired interest areas:

Preferred Formats: (see back of form for list) Technical reports, Bibliographies, legislation

Technical level(s): All levels

Comments:

Date: 7/20/78

PART II. For EEITS use only. (Type)

User No.: 250 Priority: 1

Name: John Q. Doe

Title: Environmental Engineer

Affiliation: Mayor's Office, Denver, CO

Org. Subdivision: Environmental Research Task Force

Office Address: 00 Main St., Denver, CO

Office Telephone: (303) 000-0000

Subjects:
1. Environmental impacts
2. Solar energy
3. Public opinion
4.
5.
6.

Formats: Technical reports, Bibliographies, Legislation

Tech. Level(s): All

Comments:

In EEITS: 9/1/78
Last Update: 1/1/79

Figure 5-19. Sample Set of Profile Sheets Referencing One User

5.4.8 User Match and Information Retrieval Function

The User Match is the central function of the system. It is here that user need statements, in the form of automatic dissemination "profiles" and demand requests, are matched by keyword with resources which have been indexed and entered into the EEITS. Three kinds of user match activities are discussed below:

- User Match in filling demand requests

"Proactive" Outputs
- User match in automatic dissemination
- User match in EPA-initiated general announcements and publicity

5.4.8.1 User Match--Demand Requests

These procedures are essentially similar to those performed by a reference librarian at a library or information center.

A. Inputs

(1) Demand Request Search Form

- Form and format: See Figure 5-17. Part I and II are filled out
- Source: Demand Request Function

(2) EEITS Search File

- Form and format: See Section 5.1.1 and Section 5.4.4
- Source: File Maintenance and Storage Function

B. Procedures

(1) Match Request With Records in Search File

The purpose of the user match is to answer a user's question and satisfy his information need. For most queries the starting point in locating the desired information is the EEITS Search File. The subject terms listed in Part II of the Demand Request Search Form can be looked up in the Search File to locate probable sources of information to answer the query. This activity yields one or more references or referrals indicating likely sources.

(2) Set Limits of Search For User Priority Level

As discussed previously in Section 5.4.6, the EEITS cannot serve all possible users equally. At this point, the EEITS researcher must clearly understand the reasonable limits of the search, based on user priority, the action directives specified on Part II of the Demand Request Search Form and the Search Parameters Decision Table, Table 5-2.

(3) Continue Search as Necessary to Limits

It is impossible here to describe a search technique for all possible searchers. However, a few prototype examples may be given:

- Query: A Priority Number 1 user requests a full description of a certain waste processing method

  (a) Search EEITS files. Record references to:
  documents
  people (technical experts)
  groups with interest in the area
  projects using that technology

  (b) Pull documents. If description in the documents does not satisfy request,

  (c) Contact other group or system for references and/or documents

  (d) Order other needed documents

(e) Send acquired documents and referrals to technical experts and groups to the user

- Query: A Priority Number 2 user requests an EPA representative to visit his community and give personal advice concerning an energy facility siting problem

  (a) Search EEITS files to identify workshops and conferences scheduled for the user's geographical area

  (b) Scan EPA/OEA's schedule for visits within the Region for the coming year

  (c) Locate referrals to EPA technical experts in the Search Files

  (d) Notify user of coming activities in his geographical area, and supply as backup referrals to EPA technical experts

- Query: A businessman in California (Priority Number 4) requests information on the latest automobile fuel consumption regulations and standards

  (a) Consult Search File

  (b) Refer user to source such as the Energy Information Center in San Francisco

Each search is conducted within the limits appropriate to the user priority. In some cases, additional query negotiation may be necessary.

(4) Send Results of Search to User

The search results are put in a mailing envelope, addressed, and sent to the user. If documents are required, photocopies are made so that the original remains in the EEITS document storage file.

In some cases when a search results in a significant repackaged product (e.g., a lengthy bibliography, a new abstract or summary written for the user, an interpretation/synthesis of information) it may be judged valuable to make a copy of the product and enter it into the EEITS resource collection through the Analysis, Classification and Indexing Function.

(5) Complete Search Form

Part III of the Demand Request Search Form is now filled out. recording search results. The Search Forms will be incorporated into procedures for monitoring, evaluation and accounting, discussed in Section X of this report.

C. Outputs

(1) On-Demand Outputs

- Form and format: See Section 5.3.1, On-Demand Outputs
- Disposition: sent to user. Copy kept if judged valuable and input to system at Analysis, Classification and Indexing Function

(2) Completed Demand Request Search Form

- Form and format: See Figure 5-17
- Disposition: File by date for backup and system monitoring

5.4.8.2 User Match--Automatic Dissemination

Two sets of procedures are given for this sub-function: a set of procedures requiring the computer, and a set of procedures which may be carried out manually.

A. Inputs

(1) Records from the New Resources File

- Form and format: See Figure 5-14
- Source: File Maintenance and Storage Function

(2) The User File

- Form and format: See Figure 5-19
- Source: Automatic Dissemination Function

B. Procedures

(1) Procedures (Computer Assisted)

(a) Match New Resources File to User File by Subject

This step matches new resources entering the system with users registered in the User File for the automatic dissemination service. The match is made initially by subject keyword.

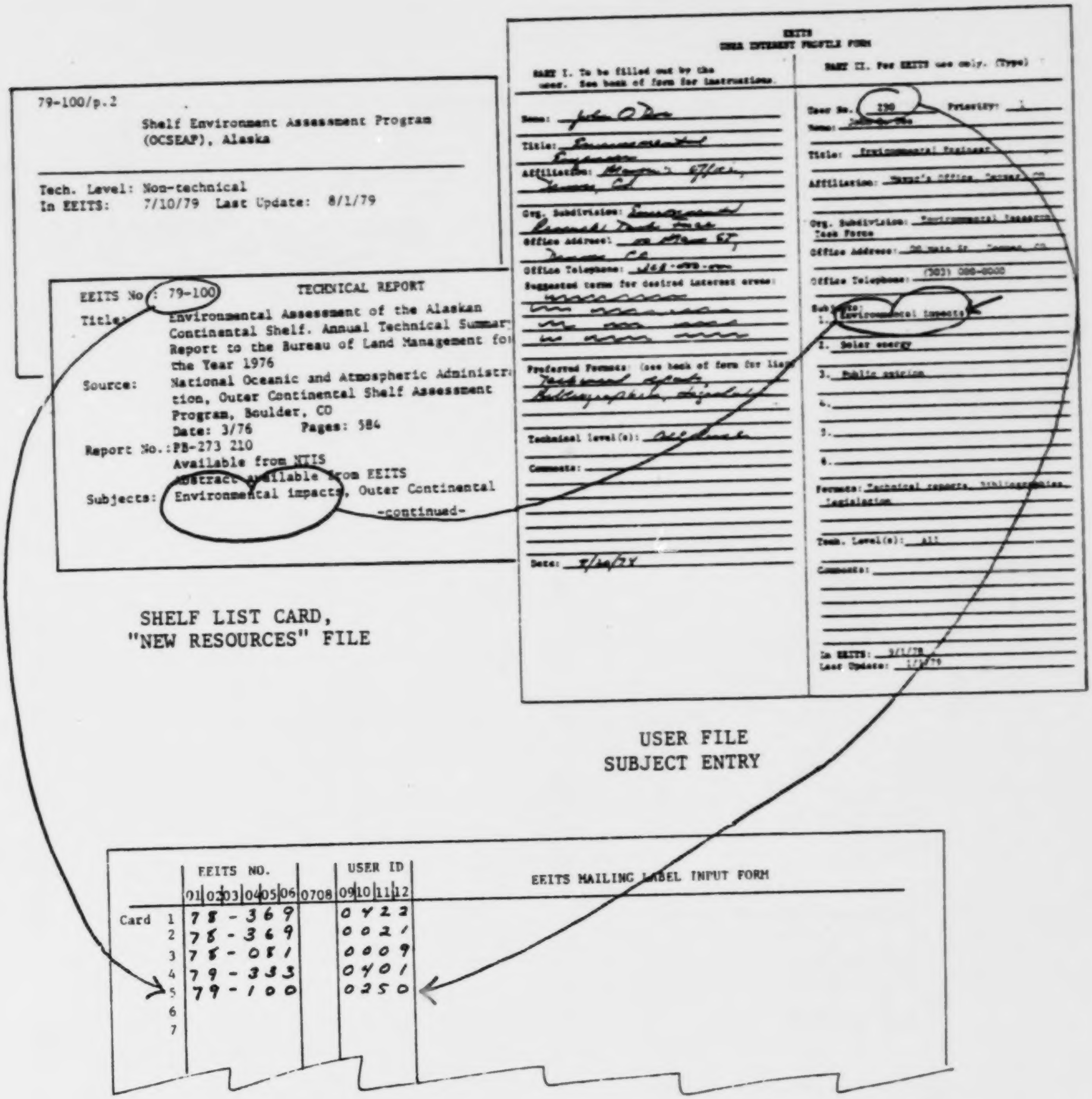
The shelf list portion of the New Resources File constitutes a master set of records for the new resources, and is used in the match process. A shelf list card is scanned for the "subjects" listed. Then the User File is searched under those subjects to retrieve a set of users who have declared interest in the subject(s) of the new resource. Format and technical level are matched at the same time. The matching procedure may be followed once a month or one by one as new resources enter the system and are indexed. AAI recommends that the actual dissemination, as described in the steps below, take place once a month regardless of the timing of the matching process. Figure 5-20 illustrates a sample user match action. Formats and technical level of the resources would also be compared with those specified by the user.

(b) Fill out Mailing Label Input Form

The user match action is recorded on a Mailing Label Input Form which is illustrated in Figure 5-21. The purpose of this form is to record which resources are matched with which users. The form is then keypunched in order to allow the computer to produce mailing labels and counts of the number of copies needed of each resource.

(c) Create/Update User Address File

In order for the computer to print mailing labels each month for the automatic dissemination outputs, a machine-readable file must be created of user identification numbers, names and addresses. This file may be created and updated



79-100/p.2

Shelf Environment Assessment Program
(OCSEAP), Alaska

Tech. Level: Non-technical
In EEITS: 7/10/79 Last Update: 8/1/79

EEITS No.: 79-100 TECHNICAL REPORT

Title: Environmental Assessment of the Alaskan Continental Shelf. Annual Technical Summary Report to the Bureau of Land Management for the Year 1976

Source: National Oceanic and Atmospheric Administration, Outer Continental Shelf Assessment Program, Boulder, CO

Date: 3/76 Pages: 584

Report No.: PB-273 210

Available from NTIS

Abstract available from EEITS

Subjects: Environmental impacts, Outer Continental

-continued-

EEITS
USER INTEREST PROFILE FORM

PART I. To be filled out by the user. See back of form for instructions.

Name: John O Doe

Title: Environmental Engineer

Affiliation: Mayor's Office, Denver, Co

Org. Subdivision: Environmental Research Task Force

Office Address: [illegible]

Office Telephone: [illegible]

Suggested terms for desired interest areas:

Preferred Formats: (see back of form for list) Technical reports, Bibliographies, Legislation

Technical level(s): All levels

Comments:

Date: [illegible]

PART II. For EEITS use only. (Type)

User No. 250 Priority: 1

Name: John O. Doe

Title: Environmental Engineer

Affiliation: Mayor's Office, Denver, CO

Org. Subdivision: Environmental Research Task Force

Office Address: 00 Main St., Denver, CO

Office Telephone: (303) 000-0000

Subjects:

1. Environmental impacts
2. Solar energy
3. Public opinion
4.
5.
6.

Formats: Technical reports, bibliographies, legislation

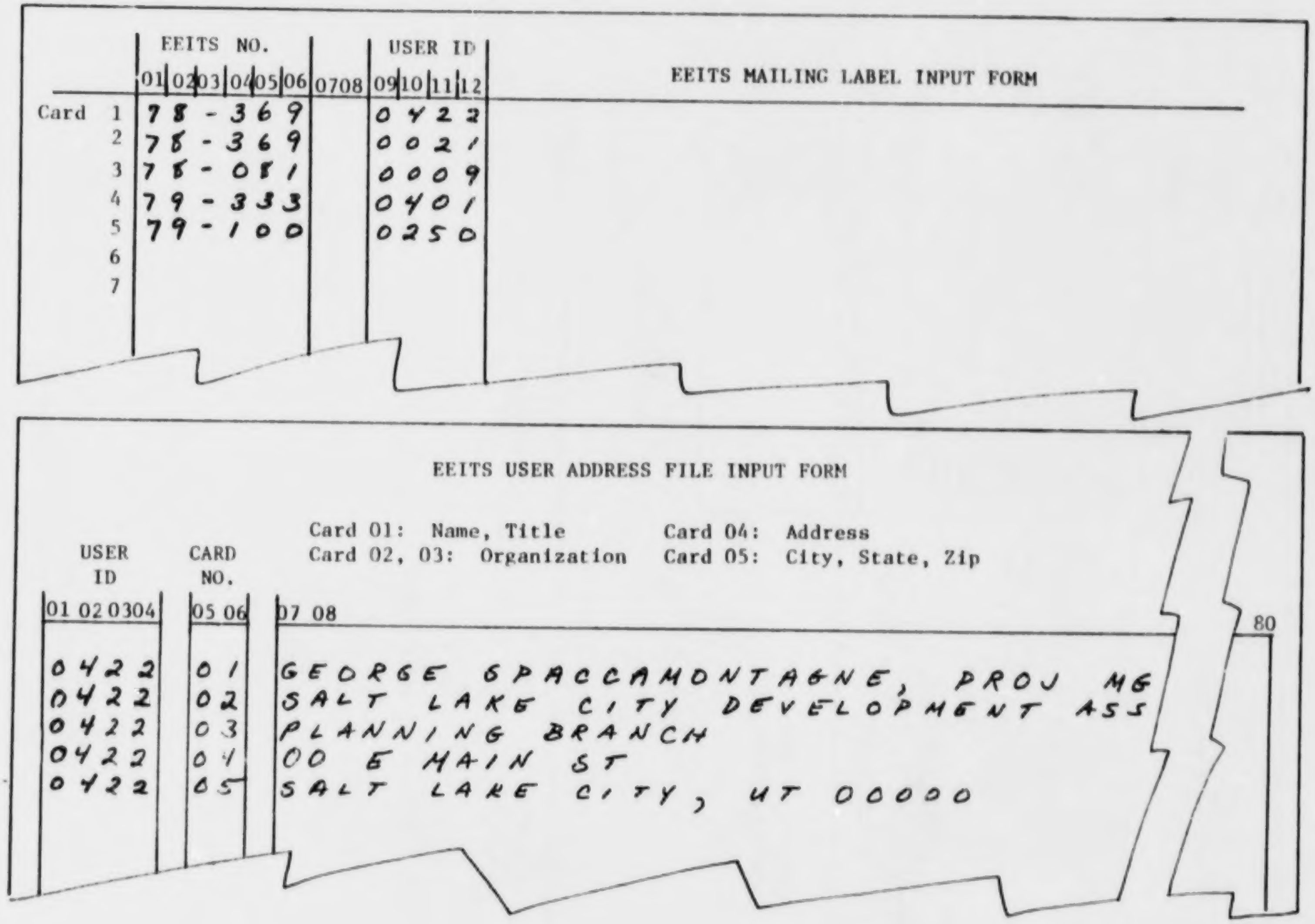
Tech. Level(s): All

Comments:

In EEITS: 9/1/78
Last Update: 1/1/79

	EEITS NO. 01 02 03 04 05 06	07 08	USER ID 09 10 11 12	EEITS MAILING LABEL INPUT FORM
Card 1	78-369		0422	
2	78-369		0021	
3	78-081		0009	
4	79-333		0401	
5	79-100		0250	
6				
7				

Figure 5-20. Example of User Match - Automatic Dissemination



EEITS MAILING LABEL INPUT FORM

Card	EEITS NO. 01 02 03 04 05 06	0708	USER ID 09 10 11 12
1	78-369		0422
2	78-369		0021
3	78-081		0009
4	79-333		0401
5	79-100		0250
6			
7			

EEITS USER ADDRESS FILE INPUT FORM

Card 01: Name, Title
Card 02, 03: Organization
Card 04: Address
Card 05: City, State, Zip

USER ID 01 02 03 04	CARD NO. 05 06	07 08 … 80
0422	01	GEORGE SPACCAMONTAGNE, PROJ MG
0422	02	SALT LAKE CITY DEVELOPMENT ASS
0422	03	PLANNING BRANCH
0422	04	00 E MAIN ST
0422	05	SALT LAKE CITY, UT 00000

Figure 5-21. Mailing Label Input Form and User Address File Input Form

as users are registered for the automatic dissemination service. Figure 5-21 shows a User Address File Input Form which is filled out as each new user profile is completed. (See Section 5.4.7) This form is then keypunched.

(d) Computer Prints Mailing Labels and Tabulates Number of Copies Needed

Once a month, a computer run takes the information keypunched from the Mailing Label Input Form and, drawing on the User Address File maintained on IBM cards, prints mailing labels for that month's batch of automatic dissemination outputs. Each mailing label also has printed on it the EEITS numbers of the resources which are to be sent to that user. At the same time a printout is produced giving the number of copies needed of each resource so that each user identified in the match action gets one copy. Samples of both of these computer outputs are illustrated in Figure 5-22.

(e) Pull Resources to be Sent and Make Additional Copies

A copy of each resource to be sent is pulled from the Document Storage File and sufficient copies are made, as indicated in the printout from the mailing label computer run, mentioned in (4) above. Then the original copies of the resources are refiled.

(f) Mail Out Resources

The resource copies are grouped together in batches corresponding to the grouping listed on the mailing labels. Then the copies are put in mailing envelopes, mailing labels pasted on and they are sent out to the users.

(2) Procedures (Manual)

(a) Match New Resources File to User File by Subject

This step of the manual procedure is essentially identical to the computer assisted procedure: located specific items in the New Resources File which correspond to user preference indicated on the profile in the User File.

(b) Record User Match

Instead of a Mailing Label Input Form, a series of cards may be used to keep track of successive matches. Figure 5-23 illustrates some of these cards. One card is made up for each user in the User File, and as matches are found document numbers written on the appropriate cards.

(c) Type Mailing Labels

The cards recording the User Match are given to a typist, who types a mailing label for each card with matches on it.

(d) Tabulate Number of Copies Needed

A staff member goes through the cards and records on a separate sheet the number of occurances of each individual document. This acts as a tally, of the number of copies needed of each document, and substitutes for the printout from the mailing label computer run.

(e) Pull Resources to Be Sent and Make Additional Copies

(f) Mail Out Resources

These two steps are identical to (e) and (f) in the automated procedures above.

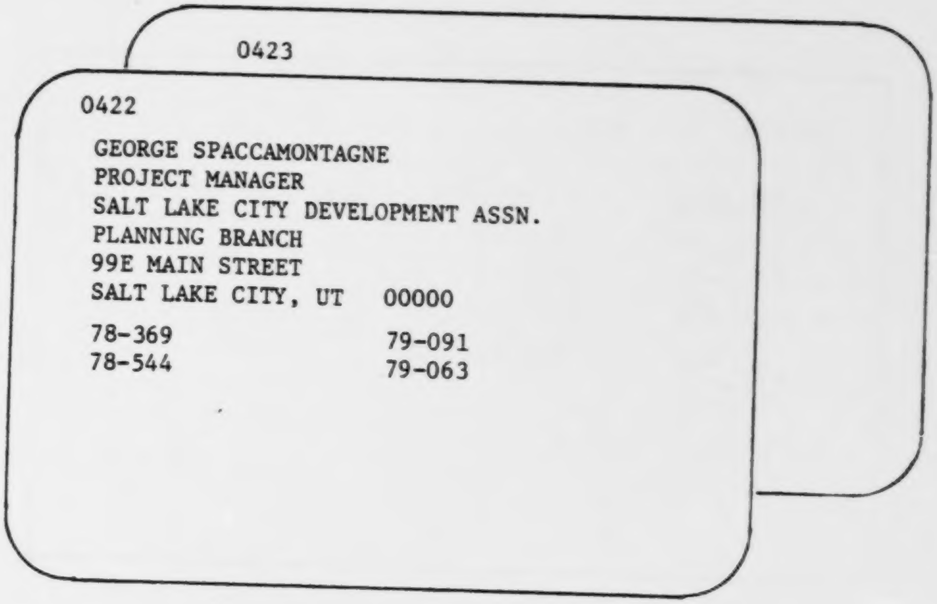
C. Outputs

(1) Automatic Dissemination Outputs

- Form and format: See Section 5.3.2, Proactive Outputs, batched for sending, with mailing labels
- Disposition: Sent to user

(2) Printout Giving Number of Copies (Computer-Assisted Procedure Only)

- Form and format: See Figure 5-22
- Disposition: File by date for backup and system monitoring procedures (discussed in Section X)



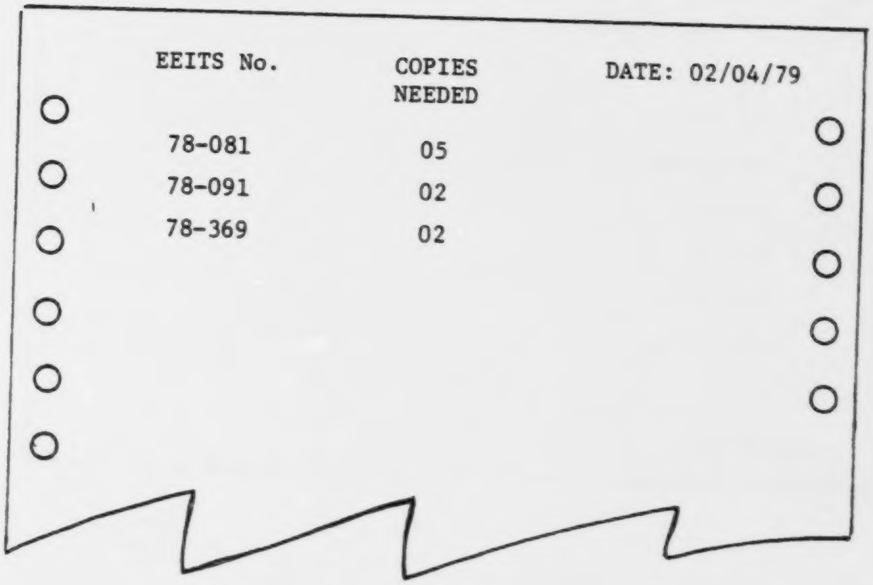
0423

0422

GEORGE SPACCAMONTAGNE
PROJECT MANAGER
SALT LAKE CITY DEVELOPMENT ASSN.
PLANNING BRANCH
99E MAIN STREET
SALT LAKE CITY, UT 00000

78-369	79-091
78-544	79-063

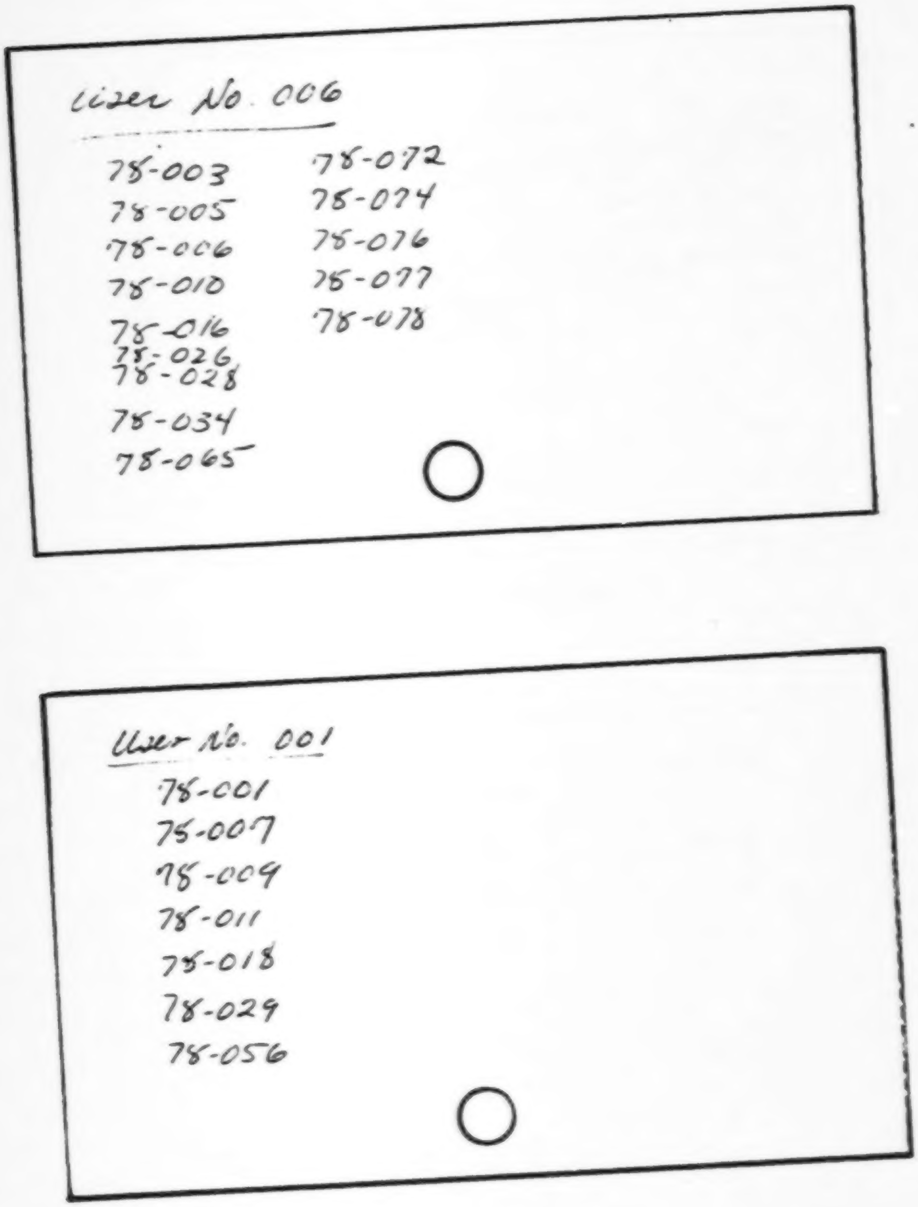
MAILING LABELS



EEITS No.	COPIES NEEDED	DATE: 02/04/79
78-081	05	
78-091	02	
78-369	02	

OUTPUT TABULATION

Figure 5-22. Sample Outputs of Mailing Label Computer Run



User No. 006

78-003
78-005
78-006
78-010
78-016
78-026
78-028
78-034
78-065
78-072
78-074
78-076
78-077
78-078

User No. 001

78-001
78-007
78-009
78-011
78-018
78-029
78-056

Figure 5-23. Sample Cards for Manual User Match (Automatic Dissemination)

5.4.8.3 User Match--EPA-Initiated General Announcements and Publicity

Previous sections of this report have discussed proactive and repackaged outputs and how they are produced (Section 5.3.2, Proactive Outputs, and Section 5.4.3, Repackaging Function). Some of these outputs are matched with users during automatic dissemination procedures discussed in Section 5.4.8.2 above. However, some of these outputs may be disseminated differently. Some outputs of this type together with mode of dissemination/delivery are:

- Brochures describing EEITS and its services, mailed to all prospective users, handed out at energy/environment workshops and conferences, available as a "handout" at the EPA Region VIII Library
- List of energy development projects planned for a given geographical area (with brief discussion), press release to local press in that geographical area
- Write-up of a recent or prospective energy/environment-related conference, in the form of an article published in local, government, public interest press.

It can be seen that the purpose of these kinds of outputs is to publicize or announce an issue, event, or service but not to a particular user who has indicated a specific interest. Rather these types of outputs may serve as vehicles through which EPA can educate and inform larger and more general groups within Region VIII of EPA priorities, and issues which are judged by EPA to be worth publicizing. How these outputs may be disseminated by EPA is discussed briefly below.

A. Inputs

(1) Awareness of National Energy Environment Issues

- Form and format: Conceptual
- Source: Scanning national newspapers, government documents, etc.

(2) Awareness of EPA Region VIII Issues

- Form and format: Conceptual
- Source: User feedback, personal contact with users, scanning local press, etc.

(3) Awareness of National and Region VIII EPA (and EEITS) Priorities

- Form and format: Conceptual
- Source: official documents, correspondence, policy meetings, etc.

B. Procedures

(1) Design Products and Dissemination Methods

Since these products serve to further EPA interests and priorities, all inputs listed above will act as general and specific stimuli to product design. Actual product development may be performed in the Repackaging Function, as discussed in Section 5.4.3. First priority should go toward developing publicity on the EEITS so that prospective users may be drawn into the system. Contact will be maintained with the office of Public Awareness and Intergovernmental Relations (OPAIR) of EPA Region VIII since this office produces many such products itself and maintains awareness of the priority areas of industry and environmental groups within Region VIII. Dissemination methods will be designed at the same time as the products. Included may be any of those methods listed in Section 5.4.3, B, (1) (c), Type of Format and Delivery (of Repackaged Information Products).

(2) Disseminate Products

Products should be disseminated according to the designed methods. It is possible that some EEITS products may be disseminated by OPAIR and other groups and that products from OPAIR and other groups may be disseminated by the EEITS.

C. Outputs

- Form and format and disposition: for examples, see Figure 5-14, items 3,4,5,9,13,14,15,17 and 19.

SECTION VI. RECOMMENDED STORAGE MEDIA (TASK 4)

This section addresses the recommended storage media for storing source information and data and index data, as required by Task 4, Selection of Storage Media. These media have been selected as an outgrowth of the system operations specifications, developed in Task 3 and discussed in Section V. preceding. This section is organized to include the following:

- Constraints and assumptions
- Storage media options investigated
- Recommended storage media
    - EEITS Search File
    - Document Storage File
    - Environmental Data Files
    - User File

6.1 CONSTRAINTS AND ASSUMPTIONS

AAI has considered the following constraints and assumptions in selecting storage media for EEITS files.

A. Coverage of Storage Media

The storage media must cover files for storing source information and data and index data. (Source: Contract 68-01-4697, Statement of Work, p. 2.) This coverage thus applies to the following files:

- EEITS Search File
  - New Resources File
  - Current Resources File
  - Master Record of System Resources } index data
- User File
- Document Storage File } source information
- Environmental Data Files } data

B. Financial Constraints

The storage media selected must be the most economically efficient alternative. (Source: Contract 68-01-4697, Statement of Work, p.2.)

C. File Size

Table 6-1 summarizes the size parameters of the 3 files listed under A. above. (For more detailed file specifications, see Section 5.1, Selection of Data Bases.)

6.2 STORAGE MEDIA OPTIONS INVESTIGATED

AAI has considered a range of storage media for use in the EEITS. These are listed below, together with advantages and disadvantages of each.

A. Automated Storage Media

These media include punched (IBM) cards, disk, and tape.

TABLE 6-1. EEITS
FILE SIZE

File*	Record Size	Number of Records**	Growth**	Number of Access Points
• New Resources File	21 data elements (maximum)	50 (maximum)	-	10 per record (maximum)
• Current Resources File	21 data elements (maximum)	600 (maximum)	-	10 per record (maximum)
• Master Record of System Resources	12 data elements (maximum)	600 (first year maximum)	600/yr. (maximum)	10 per record (maximum)
Document Storage File	range from 1 p. to multi-volume reports	600 (first year maximum)	600/yr. (maximum)	One
Environmental . . . . Data Files	Not under the control of EEITS			
User File	19 data elements (maximum)	400 first year maximum	20/yr. (maximum)	9 per record (maximum)

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* See Section 5.1 for more detailed file descriptions

** Discussion with Project Officer, 1/20/78

- Punched cards:
  - Advantages: Inexpensive to create and update file. Can be read manually if necessary. Permits manipulation by computer, resulting in high-speed updating and "massaging" of file.
  - Disadvantages: Impractical for very large files, or full text. Computer processing, if complex and required frequently, may be expensive. Random access is a problem.
- Disk
Tape }
  - Advantages: Practical for very large files with many access points. Permit manipulation and access (random for disk) by computer, resulting in high speed updating and manipulation of files.
  - Disadvantages: Impossible to read manually. Requires computer run to create and update, which may be expensive. Computer processing, if complex and required frequently, may be expensive. May deteriorate over time. Requires controlled temperature and atmosphere storage.

B. File Storage Media

"File" is used here to refer to index card files (the usual library "catalog card" files) and variations thereof.

- Advantages: Inexpensive to create and update file. May be duplicated on photocopier or other equipment. No special training or expensive equipment required to create and access file. May be designed to permit conversion to machine readable media.
- Disadvantages: Can be unwieldy for very large files with a great number of access points, as one card is required for each access point. If frequent updates are required, amount of staff filing time required may offset the inexpensiveness of the medium.

C. Microfilm/fiche

- Advantages: Can store large files in a very small space. Economical to duplicate (film to film or fiche to fiche) and transport. Materials acquired in this medium are generally inexpensive.

- Disadvantages: Requires special equipment, time, and expense for file conversion (i.e., converting paper copy to film/fiche) Difficult to "browse". Requires ready availability of readers/printers. Likely to meet with considerable user resistance and probably staff resistance. Users unlikely to have readers/printers readily available. Blowback equipment* for making printed copies from film/fiche is very expensive.

D. Library

"Library" is used here to refer to collections of printed materials (and audiovisuals) arranged in some logical order on shelves or in file cabinets or drawers.

- Advantages: Permits easy and inexpensive storage and retrieval. No special training or equipment required. Permits "browsing". Materials may be duplicated on any photocopier.

- Disadvantages: May be unwieldy and expensive in terms of space requirements for large files. Permits only one direct access point, although file can be indexed and accessible through other files of surrogates.

6.3 RECOMMENDED STORAGE MEDIA

The storage media recommended by AAI for the EEITS Search File, The Document Storage File and the User File include a combination of the media discussed in Section 3.2 above. The Environmental Data Files are currently held in machine-readable storage by EPA and will not be discussed further**.

6.3.1 EEITS Search File

There are three subfiles within the EEITS Search File, as shown in Table 6-1: the New Resources File, the Current Resources File, and the Master Record of System Resources.

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* Equipment which makes paper copies from microfiche documents.

** The contract states that the Environmental Data Files should be incorporated into the EEITS as currently handled, without modification.

A. New Resources File

This file is an index file containing records for new resources entering the system within the current month only. Thus it is designed as a very small file with an estimated maximum of 50 records with maximum number of 10 access points each. Since this file is so small the index card file medium is recommended as the simplest and most inexpensive alternative. A maximum of 500 index cards would constitute the file. (50 records x 10 access points per record = 500 index cards)

B. Current Resources File

This file is an index file containing records for resources entering the system for the current year (less the current month). This is also a fairly small file, with a maximum of 600 records, 10 access points each. The index card file medium is recommended for the New Resources File. A maximum of 6,000 index cards would constitute this file. (600 records x 10 access points = 6,000 index cards, approximately 5 index file drawers.)

C. Master Record of System Resources

This file is an index file designed to cumulate indefinitely references and access points to EEITS resources. It is expected to grow at a maximum rate of 600 records per year. If index cards were chosen as a medium for this file it would grow by approximately 5 index file drawers per year. As a less cumbersome alternative AAI recommends that this file be maintained in machine-readable form and updated once a year in a computer run that would produce a computer-printed list of system resources with an index by access points. Punched cards are recommended as the initial medium as they are relatively simple to generate and store. Conversion to tape storage may be a more feasible alternative at a later date when the file grows to several thousand records.

6.3.2 Document Storage File

This file stores the source information of the EEITS and is expected to grow by 600 records (items) per year for a maximum of 3 years (and then is merged with other existing collections). Since the file is designed to cumulate for only 3 years, producing a maximum of 1800 records, the "library" alternative proves feasible and is recommended for this file. The records (documents) may be easily stored in file cabinets in "vertical file" format.

Microfilm/fiche was rejected as a recommended medium because the comparative smallness of the file does not justify the lengthy and expensive conversion required for many inputs and the expensive blowback equipment necessary to produce the hard copy documents that would ensure user acceptance of system outputs.

6.3.3 User File

The User File is also a small file with minimum growth potential: maximum of 400 records the first year, with maximum growth of 20 records per year thereafter. As the arrangement and access for this file is essentially similar to the arrangement and access for the New Resources and Current Resources Files, the index card file medium is again recommended. Since more information is required for each record, however, (e.g., the user's own statement of needs) an 8 1/2 x 11" (or similar size) sheet of paper is recommended for use instead of the index card.

Should this file grow at a pace greater than now anticipated, consideration may be given to partial or full conversion to machine readable form with annual or biannual updates.

SECTION VII. RECOMMENDED ORGANIZATIONAL ARRANGEMENT FOR SYSTEM IMPLEMENTATION (TASK 5)

This section addresses the requirements of Task 5, Describe the Organizational Arrangement for System Implementation. Included are descriptions of the alternatives, as well as the recommended arrangements for the organizational structure of the information system itself, and the placement of the data bases and the functional activities within the EPA Region VIII office.

AAI has taken into account two constraints which are presented in the contract: the recommended organizational arrangement must be

- most feasible
- most economically efficient

for implementing and operating the EEITS.

7.1 ALTERNATIVES FOR ORGANIZATIONAL ARRANGEMENT

Alternatives were considered for the two concepts comprising an EEITS organizational arrangement:

- External organization, i.e., where the EEITS fits within the EPA Region VIII Office
- Internal organization

7.1.1 Alternatives for Placement of System Components within the EPA Region VIII Office

In considering where EEITS should "fit" into the EPA Region VIII Office organizational structure, AAI considered the following options:

- Place the EEITS within (or reporting to) the Office of Energy Activities (OEA)
- Place the EEITS within (or reporting to) the Region VIII Library
- Place the EEITS within (or reporting to) the Office of Public Awareness and Intergovernmental Relations (OPAIR)
- Subcontract the operation of the EEITS to another organization such as the Denver Public Library Regional Energy/Environment Information Center (RE/EIC) (with an EPA Project Officer within the Library or the OEA)

Some of the advantages and disadvantages of these approaches are discussed below.

A. Placement Within OEA

- Advantages: OEA is the originator of the contract, and would be expected to have the greatest interest in implementing and operating the system. Also, the OEA is the only subdivision in the EPA Region VIII Office with a specific concern for both energy and environmental issues and their interaction--corresponding to the dual energy-environment focus of the EEITS. There are, in addition, a number of experts in energy-environment subject areas in OEA.
- Disadvantages: The OEA has undergone a reorganization, and the information handling components of its functional statement have been reduced. Moreover, the OEA is not currently set up to handle information and request processing on anything but a small scale without additional trained personnel (i.e., librarians, file clerks, etc.) or additional physical space.

B. Placement Within the Region VIII Library

- Advantages: The Library is set up for information processing, with a staff of trained librarians and clerks, with some subject expertise in environment subject areas. Also, the Library already has many contacts with outside groups and within EPA, and could easily publicize an EEITS.

- Disadvantages: The library's mission and functional statement emphasize the Region VIII Office, rather than the Region VIII Community. The Library also has no energy subject focus. Moreover, the Library is a part of the Administration Services Branch of the Management Division, neither of which have functional goals relating to a region-wide service such as the EEITS.

C. Placement within the OPAIR

- Advantages: The OPAIR is already "tuned in" to the needs and priorities of potential EEITS user groups in Region VIII, and maintains many media contacts for disseminating EPA publicity and information. The staff are geared to researching and writing press releases and various types of public information documents.

- Disadvantages: The same as placement within the OEA.

D. Subcontract to the RE/EIC

- Advantages: Same as placement within the Library.

- Disadvantages: The RE/EIC is funded by several agencies, and thus EPA does not have full control and could not necessarily ensure continuation of RE/EIC services should any of the other agencies withdraw their financial backing. In addition, a subcontract would require additional funding.

7.1.2 Alternatives for EEITS Internal Organization

Two major approaches were considered for EEITS internal organization:

- Take a "start from scratch" approach and design a staffing arrangement assuming positions can be created as needed to perform system functions.

- Build the EEITS internal structure around existing capabilities within one or more EPA Region VIII organizational units.

While the first option, if implemented, would ensure a successful EEITS, it would require creation of new staff positions*, and filling these at standard GS salary rates. The second option is more economical and efficient, but would require a carefully designed supervisory structure for the system, and careful coordination to set priorities and responsibility for all system components and activities.

7.2 RECOMMENDED EEITS ORGANIZATIONAL ARRANGEMENT

The recommended EEITS organizational arrangement considers both external and internal organizational structure.

7.2.1 Recommended Placement of Data Bases and Functions within the EPA Region VIII Office (External Structure)

AAI considered the advantages and disadvantages of the alternatives discussed in Section 7.1.1 for external system organization. The recommended arrangement is a blend, combining the advantages of most of the options and minimizing the disadvantages.

The recommended arrangement segments the system functions and data bases, and places the responsibilities for the functions and data bases in different organizational units of the EPA Region VIII Office. This decentralized arrangement is designed to match each EEITS activity with that unit(s) best equipped at present to perform or hold responsibility for that activity with a minimum of additional resource outlay in staff and dollars. Table 7-1 lists system functions and data bases and those activities applicable to some or all functions, and shows which EPA Region VIII organizational unit would be responsible under the recommended design. The system as a whole would operate under the general aegis of the EPA Region VIII Library.

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* EPA resources available in the order of most constrained to least constrained are: Staff, dollars, storage space, and computer support. (Discussion with project officer, January 20, 1978.)

TABLE 7-1. EEITS FUNCTIONAL ACTIVITY RESPONSIBILITY

FUNCTIONAL ACTIVITY OR COMPONENT	RESPONSIBLE EPA REGION VIII ORGANIZATIONAL UNIT
Activities	
1. Administration of EEITS and day-to-day supervision	Library
2. Policy, planning and design (all functions)	EEITS Management Committee*
3. Computer programming and processing (all functions)	OEA, coordinating with Computer Systems Branch and Data Analysis Branch
4. Energy/environment subject expertise (all functions)	OEA
5. Functional processing procedures	
• Identification and screening	Library
• Analysis, Classification and Indexing	Library
• Repackaging	Library, OPAIR
• File Maintenance and Storage	Library
• Automatic Dissemination	Library
• Demand Requests	Library
• User Match	Library
• Photocopying and mailing in connection with all processing procedures	Library
6. Communication with other systems and data bases	OEA, Library (others *ad hoc*)
7. Data Bases	
• Search File	Library
• Document Storage File	Library
• Environmental Data Files	Data Analysis Branch
• User File	Library

*See Section 7.2.2

As shown in the table, some activities applicable to all functions are centralized. Thus the administrative activities are centered in the Library, which is responsible for all information handling and request processing, with additional input from OPAIR. The computer processing activities are handled in the Computer Systems Branch. The "policy, planning and design" activities which are delegated to an EEITS Management Committee include those in the following list:

- Defining the future direction and scope of the EEITS (mission and objectives)
- Obtaining funding for the EEITS
- Updating the criteria for inclusion of EEITS resource inputs and users
- Setting policy on the updating procedures for the EEITS Controlled Vocabulary
- Design of new system outputs (including repackaging)
- Updating EPA priorities for EEITS service to various classes of users
- Setting policy as to the extent of resource sharing between the EEITS and other information systems, both inside and outside Region VIII
- Updating and controlling monitoring and feedback activities
- Preparing policy and planning documents such as an EEITS Annual Report, and annual budgets

Figure 7-1 presents essentially the same information as Table 7-1, however, in the form of an organization chart derived from the current Region VIII organization chart. The brackets enclose the responsibilities for the adjoining organizational unit. Solid lines indicate firm organizational lines of authority. Broken lines indicate paths of cooperative activity, coordinated by the EEITS Management Committee. The zig-zag line indicates a communications link between the EEITS and other systems.

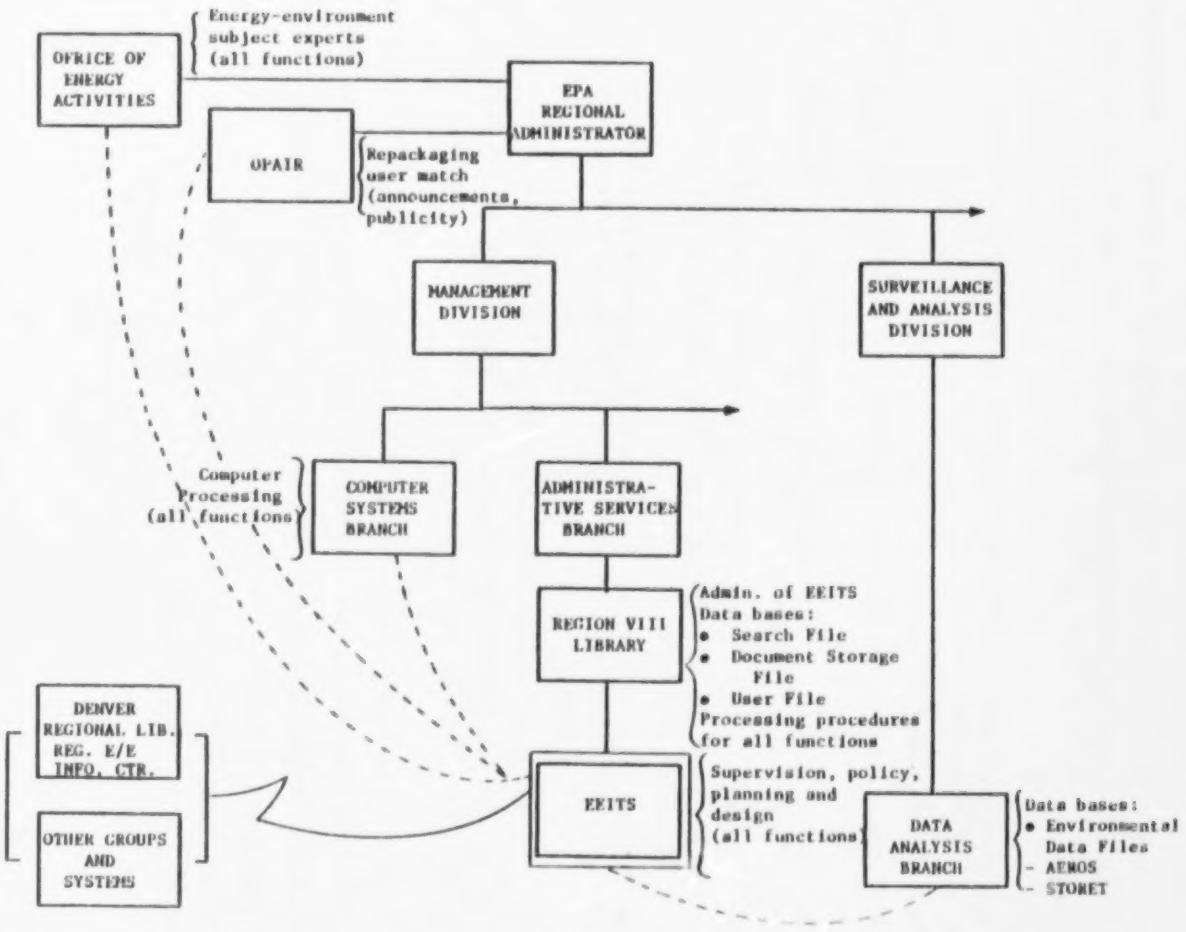

OFFICE OF ENERGY ACTIVITIES
Energy-environment subject experts (all functions)
EPA REGIONAL ADMINISTRATOR
OPAIR
Repackaging user match (announcements, publicity)
MANAGEMENT DIVISION
SURVEILLANCE AND ANALYSIS DIVISION
Computer Processing (all functions)
COMPUTER SYSTEMS BRANCH
ADMINISTRATIVE SERVICES BRANCH
REGION VIII LIBRARY
Admin. of EEITS
Data bases:
• Search File
• Document Storage File
• User File
Processing procedures for all functions
DENVER REGIONAL LIB. REG. E/E INFO. CTR.
OTHER GROUPS AND SYSTEMS
EEITS
Supervision, policy, planning and design (all functions)
DATA ANALYSIS BRANCH
Data bases:
• Environmental Data Files
- AEROS
- STORET

Figure 7-1. Organization Chart: Placement of Data Bases and EEITS Functions Within the Region VIII Office Organizational Structure

The manner in which this decentralized organizational design is to be coordinated and staffed is presented in the following section.

7.2.2 Recommended EEITS Internal Organization

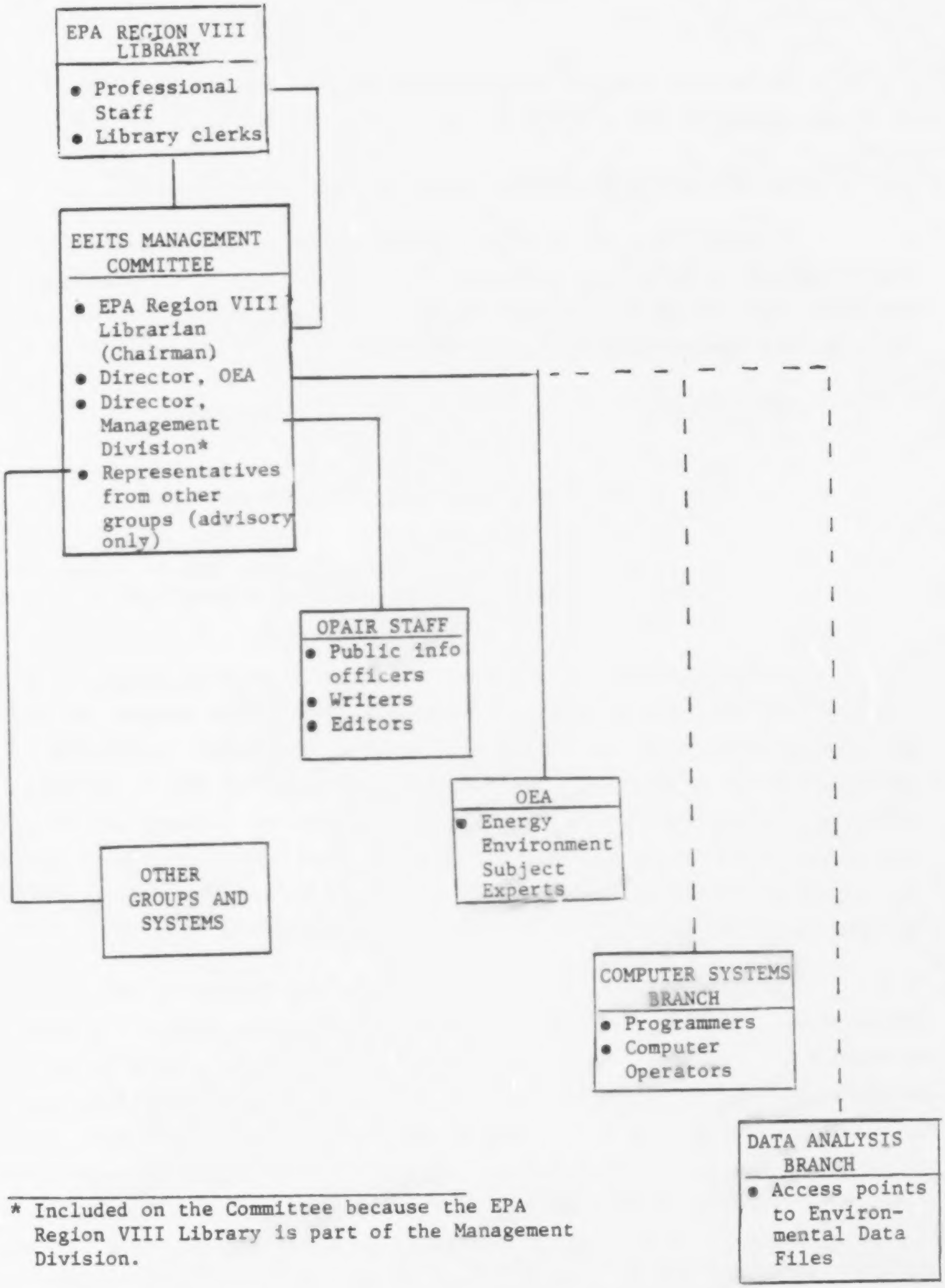
For the design of the EEITS internal organization, the second of the two approaches described in Section 7.1.2 was chosen: the recommended design is built around existing EPA Region VIII capabilities. This design is illustrated graphically in Figure 7-2.

This recommended structure is specifically designed to:

- Maximize use of existing staff capabilities within EPA Region VIII organizational units (thus proving very efficient and economical)
- Provide for supervisory coordination among the decentralized components of the EEITS (thus making the design feasible to implement and operate effectively).

As shown in Figure 7-2 the EEITS Management Committee (which has the responsibility for policy, planning and design of the EEITS components) is composed of representatives from the primary EPA organizational units responsible for carrying out the functional procedures of the system, with the Region VIII Librarian as Chairman (See Table 7-1). In addition, it is suggested that representatives from the Denver Public Library RE/EIC, WINE, and other groups and systems attend committee meetings with sufficient frequency to ensure coordination between the EEITS and other energy-environment information providers.

The representative of the Library, OEA, and OPAIR will each be responsible for seeing that the designated activities are carried out under the responsibility of his/her organizational unit as specified in this design. In addition, the OEA representative will act as liaison to obtain services from the Computer Systems Branch and the Data Analysis Branch. Should it be necessary to modify the organizational arrangement, the committee members can reallocate resources within the staffs of their respective organizational units depending on changing needs and priorities. The Librarian, in addition, will be responsible for representing the EEITS in contact with the EPA Regional Administrator's Office.


EPA REGION VIII LIBRARY
• Professional Staff
• Library clerks
EEITS MANAGEMENT COMMITTEE
• EPA Region VIII Librarian (Chairman)
• Director, OEA
• Director, Management Division*
• Representatives from other groups (advisory only)
OPAIR STAFF
• Public info officers
• Writers
• Editors
OEA
• Energy Environment Subject Experts
OTHER GROUPS AND SYSTEMS
COMPUTER SYSTEMS BRANCH
• Programmers
• Computer Operators
DATA ANALYSIS BRANCH
• Access points to Environmental Data Files

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* Included on the Committee because the EPA Region VIII Library is part of the Management Division.

Figure 7-2. Recommended Internal Organizational Structure of the EEITS

SECTION VIII. STEPS IN SYSTEM DESIGN, TEST AND IMPLEMENTATION (TASK 6)

This section presents AAI's work plan, laying out recommended actions for the detailed design, testing, and implementation of the EEITS. Included are:

- Assumptions and constraints
- Implementation steps, by function
- Implementation schedule
- Resource requirements
  - Staff
  - Space
  - Equipment
  - Computer Time
  - Purchased Services
  - Purchased Materials
- Recommended system test plan

8.1 ASSUMPTIONS AND CONSTRAINTS

AAI has considered the following assumptions and constraints in defining the steps involved in detailed systems design and implementation.

- Scheduling: As much of the system as possible is to be operational within one year of the date of commencement of implementation.
- Staffing: While staff requirements are discussed in Section 8.4.1 in terms of several full time people, it is to be understood that EPA may spread the defined positions among several part-time individuals, who divide up the job functions among them as may prove expedient.
- Equipment and Supplies: Although EPA Region VIII has most required office equipment and supplies available, all required equipment and supplies for the EEITS are specified below as if the system were to be created "from scratch"
- Computing Facilities: The following computer facilities are available at the EPA Region VIII office as of 7/31/78
    - IBM 370/168 available through remote job entry
    - Card reader (input)
    - Line printer (output)
- Processing Volumes: The following represent approximate maximum volumes for the most important EEITS inputs, outputs, and services:
    - Number of user profiles (first priority users) to be maintained in system:
      200 first year
      20 additional each subsequent year
    - Number of unique system inputs:
      600 per year (documents, persons, etc.)
    - Number of input items to be distributed per year: 600 inputs/year x 50 (average) number of multiple copies = 30,000 items
    - Number of requests per year: 2,400 (estimate based on average of 6 requests/year/user, or 400 x 6)

Estimated breakdown:

requests answered by a document:	1,200
requests answered by referral to expert person or other source:	600
requests requiring analysis or synthesis of information:	200 (repackaging)
requests answered by data sources (SAROAD, STORET, etc.):	200
requests answered by other service (AV, seminar, EPA consultant, etc.):	200
	2,400

8.2 IMPLEMENTATION STEPS

This section lists recommended implementation steps for the EEITS. Listed first are generalized steps (not tied to any one function) followed by those steps required to implement specific functions. The sequence of steps assumes system testing has taken place; but that the majority of files still need to be created.

8.2.1 Generalized Implementation Steps

A. Select EEITS Management Committee members

It is essential that this step be done first, as then the Committee may allocate responsibilities and assign tasks in order to accomplish system implementation. The committee membership is discussed in Section VII, Recommended Organizational Arrangement.

B. Establish EEITS Physical Location

It is assumed most EEITS activities will take place and files will be stored in a central location in the Region VIII office in Denver. (The desirable square footage is discussed in Section 8.4.2 below)

C. Arrange for Office Furniture, Equipment, Supplies

Included should be the following items:

- Desks
- Tables
- Bookcases
- Typewriters
- File cabinets
- Card catalog
- EEITS stamp and letterhead
- Date stamp
- Telephone

D. Acquire Appropriate Reference Tools

The EEITS staff will need:

- NTIS vocabulary control tools
- EEITS Controlled Vocabulary
- Appropriate published standards*
- EPA authority file tools
- Card catalog filing rules
  etc.

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*E.g., Writing Abstracts. American National Standards Institute, ANSI Z39.14-1971.

E. Finalize and Reproduce Description of System Procedures

Section V. Specification of System Operations, of this report may be used as a prototype for an initial procedures manual.

F. Print Copies of all Forms

AAI assumes these forms could be photocopied on the Xerox 9200 located in the Region VIII office. The forms to be duplicated include:

- User Profile Form
- EEITS Resource Input Worksheet
- Demand Request Search Form
- Mailing Label Input Form
- User Address Input Form

G. Acquire and Train Staff

It is expected that most staff will be drawn from personnel currently employed at the EPA Region VIII office.

H. Arrange for Purchased Services

Three types of support services will be needed:

- Keyboarding support
- Programmer support
- Computer time rental (through Computer Systems Branch)

These services are needed to produce a computer-printed Master Record of System Resources (Master file of all system holdings) and the mailing labels for the automatic distribution service (automated mode of operation).

8.2.2 Identification and Screening Function

For more details on the processing aspects of this and the following sections, see Section V, Specification of System Operations.

A. Arrange for Scanning of Mail

Mail addressed to OEA, OPAIR, and the EPA Library is to be scanned for relevant inputs. An individual must be designated in each group to screen the incoming general mail.

B. Notify EPA Region VIII Staff of EEITS

It is expected that Region VIII staff in and outside OEA may prove to be good sources of inputs if they are requested to notify the EEITS of likely items and other sources.

8.2.3 Analysis, Classification and Indexing Function

A. Purchase Catalog Cards

AAI recommends that the catalog cards for the Search File be reproduced on EPA's Xerox 9200. Needed for this procedure are special blank sheets with perforations which may be separated after reproduction to form catalog cards.

8.2.4 Repackaging Function

A. Write and Disseminate EEITS Publicity

Strictly speaking, this step is not a step in implementation of this function, but its first assignment. The publicity should include:

- Brochures describing request and automatic dissemination services
- Press releases to Region VIII local press and government press

This step will ensure that when the EEITS commences operation, that some of the potential user population will be aware of its services.

8.2.5 File Maintenance and Storage Function

A. Develop, Test, and Document Programs

Needed are computer programs, to be run on EPA's 370/168 (RJE) for the twice-yearly production of a computer-printed Master Record of System Resources.

8.2.6 Demand Request Function

A. Prepare List of Energy-Impacted Communities

This list should be readily available so that EEITS staff may assign a priority to users who contact the system. (See Section V.)

8.2.7 Automatic Dissemination Function

Steps required for this service are described under "general" and User Match steps.

8.2.8 User Match Function

A. Develop, Test and Document Programs

Needed are computer programs to print mailing labels for the automatic dissemination outputs, and to compute number of copies needed of each output item.

8.3 IMPLEMENTATION SCHEDULE

This section presents and describes the recommended time schedule for the implementation steps listed in the previous section. Figure 8-1 gives an overall summary of the recommended time frame for carrying out the generalized implementation steps and implementing the system functions. As can be seen on the schedule, all functions should be operational at the end of 6 months. Figure 8-2 and 8-3 show the specific steps within the implementation schedule. Specific comments regarding the scheduling of particular steps and their interrelationships follow.

A. Generalized Implementation Steps

Since these steps are concerned with the fundamental activities of system location, staffing and support, they are to be accomplished first, within the first 3 months. The committee must be selected first; then committee members may assume responsibility for ensuring completion of other implementation tasks.

B. Identification and Screening Function

The implementation steps relating to this function may commence as soon as the Committee is selected. Operation of the function after two months will ensure a sizeable collection of resources by system start-up, after the 6th month.

C. Analysis, Classification, and Indexing Function

These steps may be done in parallel with those of the previous function. Both functions are designed to commence operations simultaneously so that as soon as resource inputs enter the system, they may be processed.

D. Repackaging Function

Publicity for the EEITS should not commence until just before the system is to be fully functioning. Document abstracting, however, (not shown on the milestone chart) can commence along with classification and indexing.

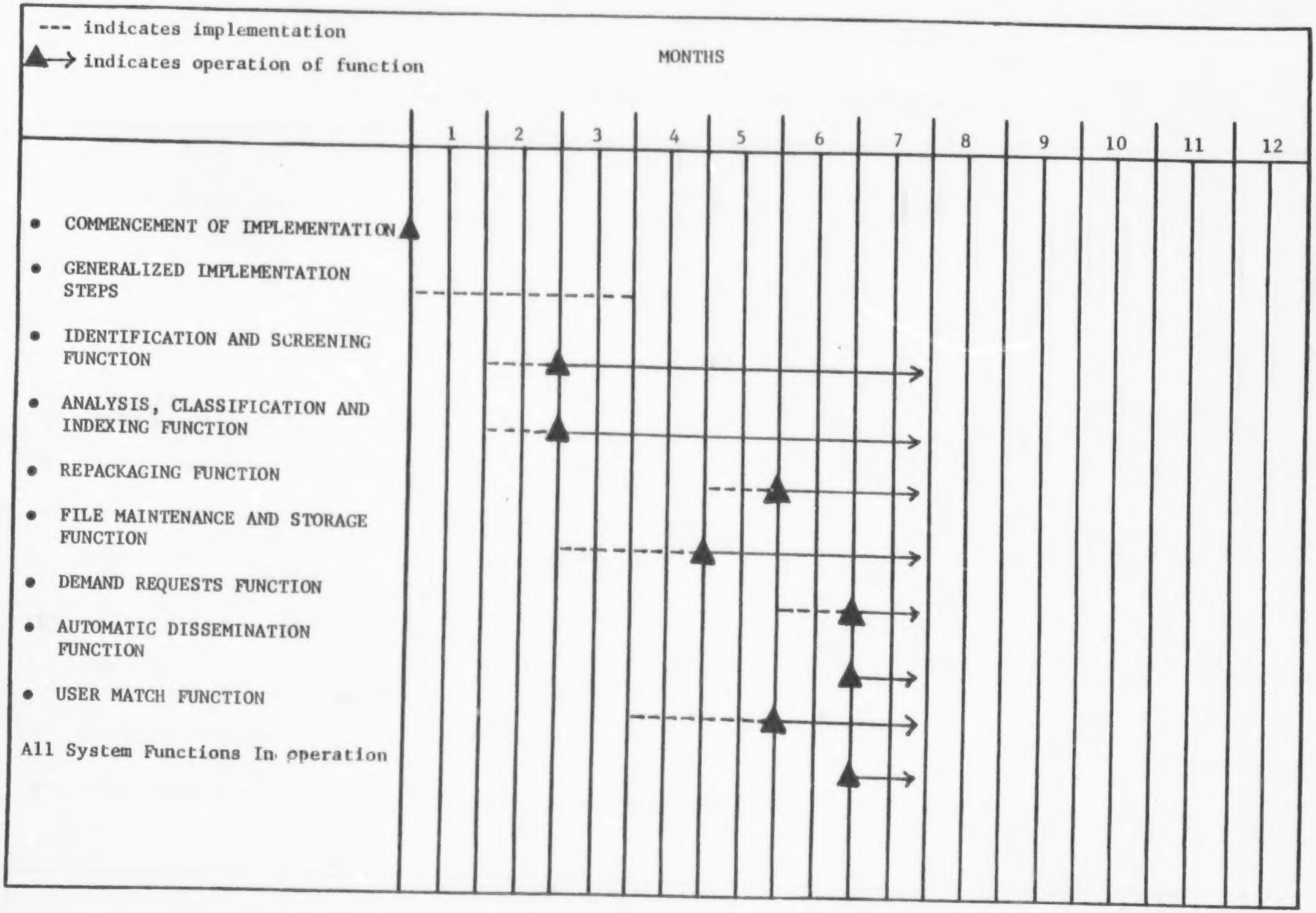


Figure 8-1. Implementation Schedule: Summary

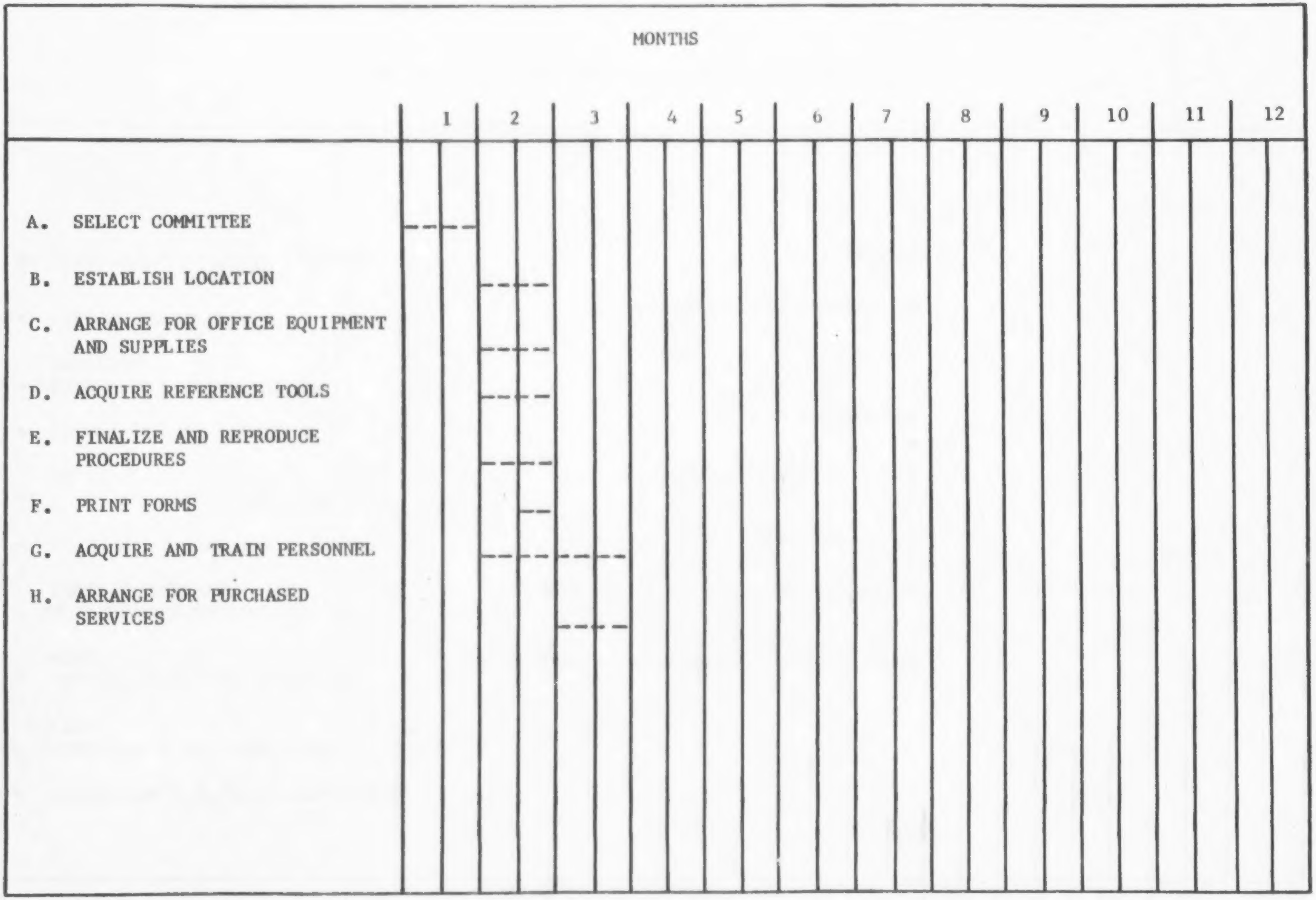
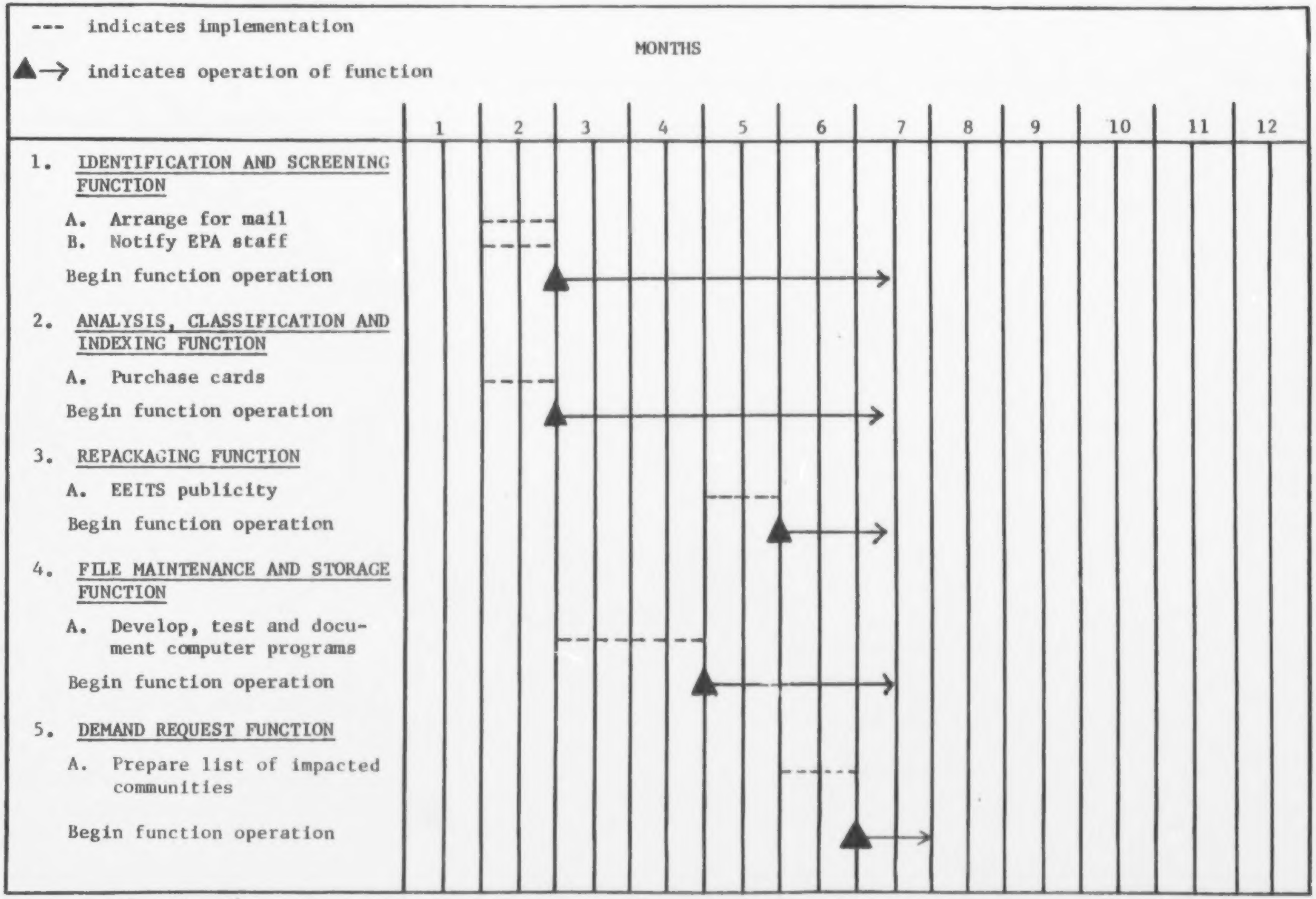


Figure 8-2. Implementation Schedule: General Steps



(continued)

Figure 8-3. Implementation Schedule: System Functions

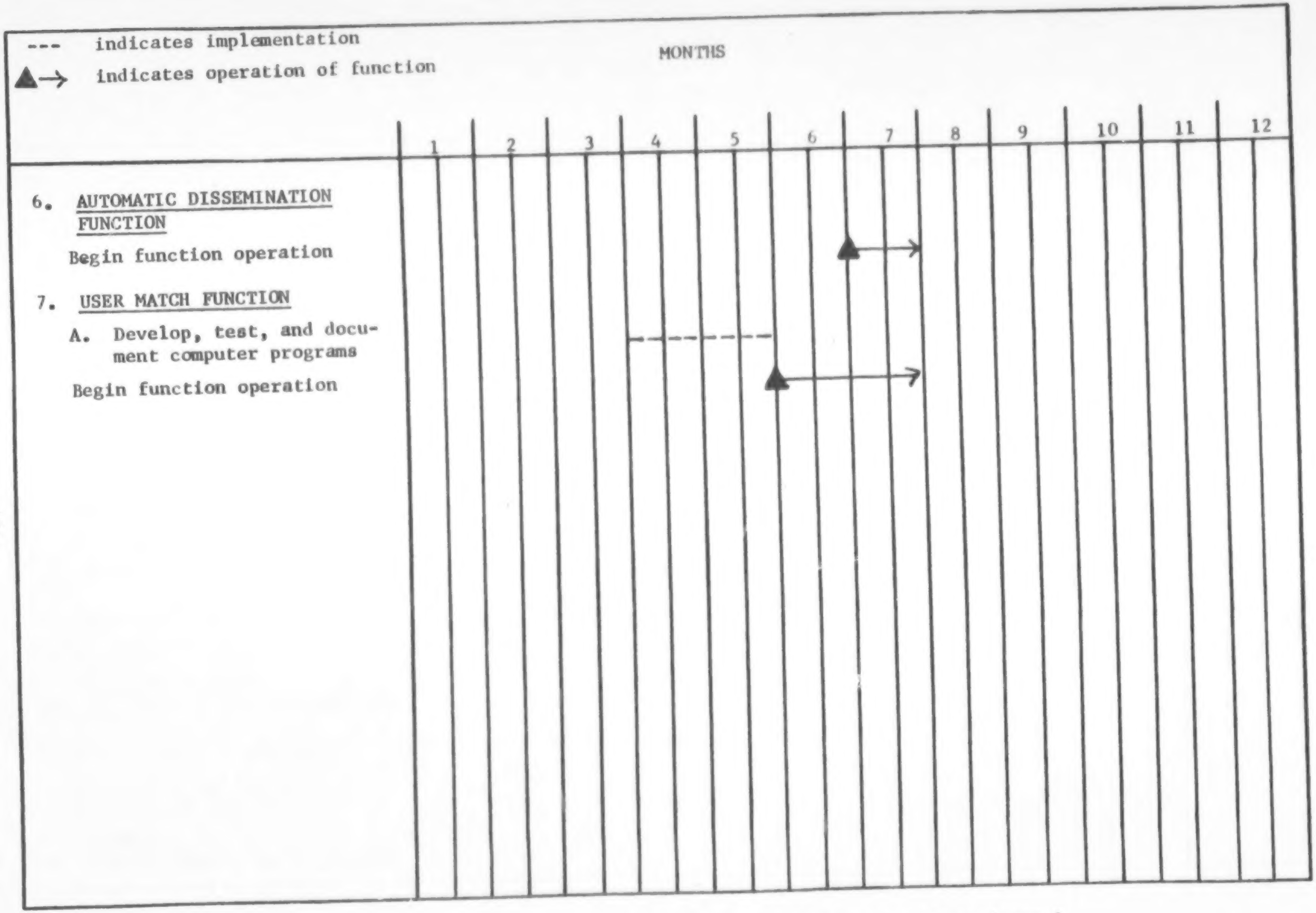


Figure 8-3. Implementation Schedule: System Functions (cont.)

E. File Maintenance and Storage Function

As resource inputs are processed and cards are produced, these items may be filed. Two months, however, are allotted for design and test of computer programs to produce the Master Record of System Resources. This program is designed to be run at the end of the first year (i.e. after 6 months of system operation) and at 6 month intervals thereafter.

F. Demand Request Function

G. Automatic Dissemination Function

These user-directed functions are the last to be implemented and operational, as sufficient backlog of processed inputs should build up in order to constitute an adequate resource collection.

H. User Match Function

Development and testing of the computer programs for producing mailing labels has been scheduled to overlap by two weeks with the development of computer programs to produce the Master Record of System Resources. Thus the programmer who develops the programs can write one set and while these are being tested and documented, write the second set. (Three weeks of continuous effort)

8.4 RESOURCE REQUIREMENTS

This section presents the resource requirements for system implementation. Types of resources discussed include:

- Staff
- Space
- Equipment
- Computer Time
- Purchased Services
- Purchased Materials

8.4.1 Staff

AAI has characterized recommended EEITS staffing in terms of full time personnel. However, in actuality, several part-time individuals could divide up the responsibilities and job activities to satisfy the full time equivalent requirement.

The following staff positions are recommended for system implementation (and subsequent operation). (Estimated salaries are given in Section IX, Estimated Costs.) The requirement for two full time staff positions (or the equivalent) is based on a rough estimate of time required to perform system procedures at the level of inputs, outputs, and service listed in 8.1, Assumptions and Constraints.

A. EEITS Research Analyst

- Title: Research Analyst
- Reports to: EEITS Management Committee
- Major functions:
  - Performs analysis, classification and indexing of all inputs
  - Performs abstracting and repackaging activities
  - Performs all weeding activities after 3rd year of system operation
  - Fulfills demand requests
  - Completes user profiles for automatic dissemination
  - Performs user match (research) for demand requests, automatic dissemination, and other, repackaged, products
  - Supervises clerk-typist
  - Oversees monitoring activities and accounts for EEITS activities and expenditures to the EEITS Management Committee
- Educational Requirements
  - M.S. in library or information science, or equivalent
  - Experience or degree in technical subjects related to energy/environment topics is desirable.
- Experience requirements
  - At least 2 years experience in library or information handling, including cataloging, indexing, reference
  - Knowledge of Region VIII and current energy/environment issues

B. EEITS Clerk-Typist

- Title: Clerical Assistant and Typist
- Reports to: EEITS Research Analyst
- Major functions:

    - Performs identification and screening of inputs
    - Checks new inputs against files for duplicates
    - Labels new inputs to system
    - Types catalog card masters
    - Responsible for having printed material photocopied
    - Pulls and refiles documents, files documents and cards, updates all files
    - Mails out all items, typing mailing labels when needed
    - Keeps statistics and logs as directed
    - Types correspondence, abstracts, other outputs

- Educational Requirements
    - High school diploma
    - College degree desirable
    - Good typing and filing skills
- Experience Requirements
    - At least 2 years experience in an office environment, typing, filing, etc.

8.4.2 Space

AAI estimates that approximately 200 square feet of floor space would be needed to house the EEITS. This estimate is based on a prototype floor plan, which is shown in Figure 8-4. As is seen in Figure 8-4, an area 12 feet by 16 feet is sufficient to hold two desks, several tables, and bookcases, seven file cabinets, a card catalog, all which are required for EEITS activities (see 8.4.3, below).

8.4.3 Equipment

The following furniture and equipment are deemed necessary for implementation and operation of the EEITS.

- General office equipment
    - 2 desks
    - 2 tables working and intermediate work
    - 2 bookcases holding areas
    - 2 chairs
    - telephone: 1 instrument with 2 lines
    - 2 typewriters

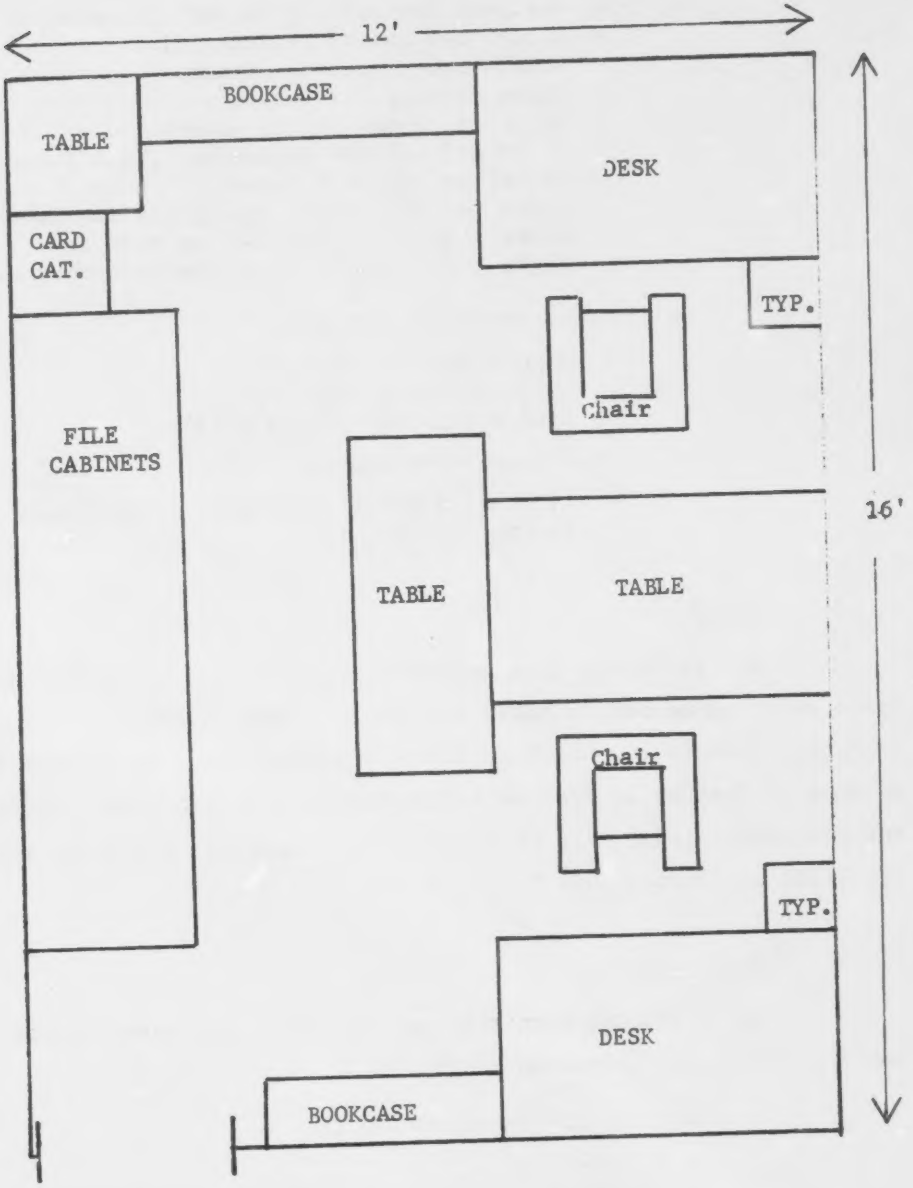

12'
16'
BOOKCASE
TABLE
DESK
CARD CAT.
TYP.
Chair
FILE CABINETS
TABLE
TABLE
Chair
TYP.
DESK
BOOKCASE

Figure 8-4. EEITS Prototype Floor Plan

- File storage equipment
  - 7 5-drawer file cabinets (for Document Storage File and User File)
  - 35 Pendaflex drawer frames (one per drawer)
  - 1 6-drawer card catalog unit (potential holding capacity of 6,000 index cards)
- Labeling equipment
  - date stamp
  - EEITS identification stamp

8.4.4 Computer Time

Two computer programs are required by EEITS procedures: one to print a Master Record of System Resources (twice per year), and one to print mailing labels and perform counts for the automatic dissemination service (once a month). CPU* times given below are estimated for application on an IBM 370/168.

- Master Record of System Resources programs:
  - CPU time to develop and test: 45 minutes
  - CPU time to run: 10 minutes (the first year, required time increases to 30 minutes at the end of the fifth year as the file grows larger)
  - CPU time for operation per first year: 20 minutes (assuming program is run twice a year)
- Program to print mailing labels:
  - CPU time to develop and test: 35 minutes
  - CPU time to run: 10 minutes
  - CPU time for operation per year: 120 minutes (assuming program is run 12 times per year, once a month)

8.4.5 Purchases Services

EEITS purchased services are of three types: (a) Programmer support (required for the two programs cited in the preceding section), (b) Keypunching (required for data conversion preliminary to operation of these programs), and (c) photocopying.

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*Central Processing Unit

A. Programmer support

- To develop and test Master Record of System Resources program: 5 mandays
- To develop and test mailing label program: 5 mandays

B. Keypunching (estimated maximum volume)

- Master Record of System Resources program
  - implementation: 600 cards (program cards)
  - operation: 9000 cards first and second year
    9600 cards each following year (creation of file, and file updates)
- Mailing label program
  - implementation: 1600 cards (program cards plus creation of initial User Address File)
  - Operation: 5100 cards per month x 12 =
    61,200 cards per year
    (inputs to monthly run of program to create mailing labels)

C. Photocopying

- Forms printing
  - User Profile Form
    initial printing: 1,000 (2 sides)
    per year thereafter: 50 (2 sides)
  - Resource Input Worksheet
    initial printing: 1,000 (4 pages)
    per year thereafter: 1,000 (4 pages)
  - Demand Request Search Form
    initial printing: 3,000 (1 page)
    per year thereafter: 3,000 (1 page)
  - Mailing Label Input Form
    initial printing: 1,500 (1 page)
    per year thereafter: 1,500 (1 page)
  - User Address Input Form
    initial printing: 500 (1 page)
    per year thereafter: negligible

  Total Pages per first year: 11,000 (initial printing)
  Total Pages second and following years: 8,600

- Catalog cards:
  - printed on 6-up sheets (6 cards/sheet), to produce 6,000 cards (10 cards each for 600 inputs): 1,000 pages (per year)

- User File
  - 200 records, 10 sheets per record: 2,000 pages (first year)
  - 20 records, 10 sheets per record: 200 pages (subsequent years)

- Copies of items sent to users:
  - 600 items per year, average distribution to 50 users, 30,000 copies, @ 10 pp each: 600 x 50 x 10 = 300,000 pages (per year)

Total Photocopied pages first year:

- Forms: 11,000
- Cards: 1,000
- User File: 2,000

14,000

Total Photocopied pages, second and following years:

- Forms: 8,600
- Cards: 1,000
- User File: 200
- Copies of Items: 300,000

309,800 pages/year

8.4.6 Purchased Materials

The following purchased materials and supplies are required:

- Stick-on labels: 600 (per year) for labeling documents)
- Catalog card sheets, reproducible masters, 6-up: 150 (per year) (includes extra for errors, revisions)
- Pendaflex 4" box bottom file folders: 250 (total needed)
- General office stationary: letterhead, envelopes (franked), etc.
- Estimated volume of outgoing mail: 40,000 items/year

SECTION IX. ESTIMATED COSTS INVOLVED IN IMPLEMENTATION AND ROUTINE OPERATION OF SYSTEM (TASK 7)

The previous section of this report has listed the steps to be taken and resources required to implement the EEITS. This section presents costs associated with both this initial implementation, and on-going operation. Included are:

- Key cost assumptions and constraints
- System implementation costs (duration of six months)
- System operation costs (first five years)
- Summary of costs by year

Costs have been estimated by the 6 resource categories discussed in the previous section:

- Staff
- Space
- Equipment

- Computer time
- Purchased materials
- Travel and living

Based on discussions between AAI and EPA, AAI understands that much of the resources required for implementation and operation of the system will be drawn from EPA's Region VIII support services, with no incremental costs to the EEITS. However, AAI has shown all significant costs without regard to whether these would be absorbed or additional costs. (Costs which actually would be charged to the EEITS are shown in Table 9-2, and discussed in Section 9.5.)

9.1 KEY COST ASSUMPTIONS AND CONSTRAINTS

The following list of key assumptions and constraints, developed in conjuction with EPA, were made in deriving system costs.

- Staff:

  Salary is to be estimated based on the current going rate for personnel with experience and qualifications required

- Space:

  Space is to be costed at $9.02 per square foot per year

- Equipment:

  Purchased equipment costs may be estimated from business equipment catalogs. Telephone is to be costed at $350/year for 1 instrument with 2 lines.

- Computer Time:

  Computer time is to be costed on the basis of $30 per minute of CPU time.*

- Purchased Services:

  Programmer support: costed at current going salary for a programmer with two years experience with COBOL and JCL (overhead, fringe and other such elements have not been included)

  Keypunching: costed at the rates of $75 per thousand cards to key and verify. Source based on commercial service bureau rates

  Photocopying: costed at EPA rate of .03 per page (includes paper and supplies)

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*Consideration was given to basing computer cost estimates on the pricing algorithm used by COMNET, which EPA uses. However, it was agreed upon by AAI and EPA that this algorithm was not feasible to apply at this design stage, and therefore AAI may base the computer cost estimates on current experience with EDP processing and service bureaus.

- Purchased Materials:

  Costed from current business and library equipment and supply catalogs. Mailing costs are not to be given: estimated number of pieces of mail is supplied in Section 8.4.6.

- Travel and Living:

  Travel costs are estimated on the basis of $35 per day, plus transportation, plus $25 per trip (per person). (EPA travel allottment)

9.2 SYSTEM IMPLEMENTATION COSTS

System implementation is designed to last over a six month period, during which various functions become operational at different points in time within the six months. Costs have been rounded to the nearest $50.

9.2.1 Staff

Since staff are to be hired at the beginning of implementation, costs have been given for the entire 6 month period.

- Position: Research Analyst (one person)
  - Estimated salary: $21,000 per year
  - Employment for six months (1/2 year) $21,000 ÷ 2 .... $10,500
- Position: Clerical Assistant and typist (one person)
  - Estimated salary: $13,000 per year
  - Employment for 6 months (1/2 year) $13,000 ÷ 2 .... $6,500

TOTAL ESTIMATED IMPLEMENTATION COSTS FOR STAFF: $17,000

9.2.2 Space

- 200 square ft. x $9.02 per square foot per year, Rental/overhead for 6 months (1/2 year)
  200 x $12 ÷ 2 .... $ 900

9.2.3 Equipment

- 2 desks each $150
  $150 x 2.................................... $300

• 2 tables each $75 $75 x 2	$150
• 2 bookcases each $100 $100 x 2	$200
• 2 chairs each $100 $100 x 2	$200
• Telephone - one instrument, 2 lines - service for 6 months (1/2 year) $350 ÷ 2 = 175	$200
• Two typewriters IBM Correccible Selectric or equivalent, each $850 $850 x 2	&1700
• 7 steel five-drawer file cabinents each $180 $180 x 7 = 1260	$1250
• 35 Pendaflex drawer frames each $5 $5 x 35 = 175	$200
• One 6-drawer wood card catalog unit each $150	$150
• Date stamp, EEITS stamp	negligible
TOTAL ESTIMATED IMPLEMENTATION COSTS FOR EQUIPMENT	$4,350

9.2.4 Computer Time

• Master Record of System Resources Program CPU time to develop and test: 45 minutes at $30 per minute	$1350

- Program to print mailing labels: CPU time to develop and test: 35 minutes at
  $30 per minute....................................$1050

  TOTAL ESTIMATED IMPLEMENTATION COSTS
  FOR COMPUTER TIME $2400

9.2.5 Purchased Services

- Programmer support: 10 man days (2 work weeks)
  Estimated salary: $19,000 per year
  $19,000 ÷ 26 = 730 ....$700

- Keypunching: 2,100 cards at $75 per thousand
  $75 x 2.1 - 157 ....$150

- Photocopying:

  - Forms: 11,000 pages (initial printing)
  - Catalog cards: 1,000 pages
  - User file: 2,000 pages
    Total: 14,000 pages each .03
    .03 x 14,000 = 420 ....$400

  TOTAL ESTIMATED IMPLEMENTATION COSTS FOR
  PURCHASED SERVICES $1250

9.2.6 Purchased Materials

- Pendaflex box bottom file folders: 250 at .40 each
  .40 x 250 = 125 ....$150

- General office stationary negligible

  TOTAL SYSTEM IMPLEMENTATION COSTS $26,050

9.3 SYSTEM OPERATION COSTS

This section presents estimated costs projected over the first five years of system operation. Costs have been rounded to the nearest $50.

9.3.1 Staff

Staff costs are projected to remain constant over the first five years.

- Position: Research Analyst (one person)
  Estimated salary: $21,000 per year $21,000

- Position: Clerical Assistant (one year)
  Estimated salary: $13,000 per year.................$13,000

TOTAL STAFF COSTS PER YEAR FOR OPERATION, YEARS
1 THROUGH 5 $34,000

9.3.2 Space

- 200 square feet, at $9.02 per square feet per year
  $12 x 200 .... $1800
  (space cost is projected to remain constant over
  the first five years)

9.3.3 Equipment

- Telephone
  - one instrument, 2 lines
  - service per year: $350 ....$350
    (telephone cost is projected to remain
    constant over the first five years)

TOTAL EQUIPMENT COSTS PER YEAR FOR OPERATION,
YEARS 1 THROUGH 5 $350

9.3.4 Computer

- Master Record of System Resources Program* Run twice per year, $30 per minute of CPU time

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*As the size of the file increases, computer time to process the file increases

- Year 1: 20 minutes: 20 x $30 ....$600
- Year 2: 25 minutes: 25 x $30 ....$750
- Year 3: 30 minutes: 30 x $30 ....$900
- Year 4: 40 minutes: 40 x $30 ....$1200
- Year 5: 50 minutes: 50 x $30 ....$1500

- Program to print mailing labels, run 12 times per year, 10 minutes per run
  - 120 minutes per year
  - $30 per minute
    $30 x 120 ....$3600

TOTAL COMPUTER COSTS PER YEAR FOR OPERATION, YEARS 1 THROUGH 5:

- Year 1 ....$4200
- Year 2 ....$4350
- Year 3 ....$4500
- Year 4 ....$4800
- Year 5 ....$5100

9.3.5 Purchased Services

- Keypunching:
  - 70,200 cards per year, years 1 and 2
    $75 x 70.2 = 5,265 ....$5250
  - 70,900 cards per year, years 3-5
    $75 x 70.9 = 5,317 ....$5300
- Photocopying:
  - Forms: 8,600 pages per year
  - Catalog cards: 1,000 pages per year
  - User file: 200 pages per year
  - Copies of items: 300,000 pages per year
    Total: 309,800 pages x .03 = 9,294 .... $9300

(Photocopying costs are projected to remain constant over the first five years)

TOTAL PURCHASED SERVICE COSTS PER YEAR FOR OPERATION, YEARS 1 AND 2 $14,550

TOTAL PURCHASED SERVICE COSTS PER YEAR FOR OPERATION, YEARS 3-5 $14,600

9.3.6 Purchased Materials

• Stick-on labels: 1000 per year at $4 per thousand	negligible
• Catalog card sheets, reproducible masters, 6-up, 1,000 per year at $70 per thousand	$100
• General office stationary:	negligible

(Purchased materials costs are projected to remain constant over the first five years)

TOTAL PURCHASED MATERIALS COSTS PER YEAR	$100

9.3.7 Travel and Living

AAI estimates that a maximum of 25 trips per year to energy impacted communities within Region VIII may be desirable. In estimating travel expenses, a trip from Denver to Pierre, South Dakota has been taken as an average.

• Air fare, round trip, Denver to Pierre	$120
• Per diem one day trip	$35
• Incidental travel costs	$25
per 1 person, 1 trip	$180
$180 x 25	$4,500

9.4 SUMMARY OF COSTS BY YEAR

Table 9-1 summarizes the costs presented in previous subsections of Section IX in tabular format from the period of initiation of implementation to the end of five years of system operation.

TABLE 9-1. SUMMARY OF IMPLEMENTATION AND OPERATION COSTS BY YEAR

Time Period / Resource Category	Implementation (6 months)	YEAR OF OPERATION				
		1	2	3	4	5
Staff	$17,000	$34,000	$34,000	$34,000	$34,000	$34,000
Space	900	1,800	1,800	1,800	1,800	1,800
Equipment	4,350	350	350	350	350	350
Computer time	2,400	4,200	4,350	4,500	4,800	5,100
Purchased services	1,250	14,550	14,550	14,600	14,600	14,600
Purchased materials	150	100	100	100	100	100
Travel and Living	-	4,500	4,500	4,500	4,500	4,500
TOTAL	26,050	59,500	59,650	59,850	60,150	60,450

9.5 SUMMARY OF COSTS BY EPA ORGANIZATIONAL UNIT

Of the seven resource categories for which costs are presented above, several are directly charged to the EEITS, several to the EPA Region VIII office, and the remainder to EPA Headquarters:

- Staff: directly charged to the EEITS
- Space: charged to EPA/HQ
- Equipment: EPA Region VIII Office
- Computer Time: EPA Region VIII Office
- Purchased Services: EPA Region VIII Office
- Purchased Materials: EPA Region VIII Office
- Travel and Living: directly charged to the EEITS

Table 9-2 presents the same total costs as Table 9-1 (for EEITS implementation and operation over a five year period), but breaks these costs by the responsible EPA organizational unit.

TABLE 9-2. SUMMARY OF IMPLEMENTATION AND OPERATION COSTS BY EPA ORGANIZATIONAL UNIT

Time Period / EPA Org. Unit	Implementation (6 Months)	Year of Operation				
		1	2	3	4	5
EPA/HQ	$ 900	$ 1,800	$ 1,800	$ 1,800	$ 1,800	$ 1,800
EPA Region VIII Office	8,150	19,200	19,350	19,550	19,850	20,150
EEITS	17,000	38,500	38,500	38,500	38,500	38,500
TOTAL	26,050	59,500	59,650	59,850	60,150	60,450

SECTION X. MONITORING, EVALUATION, AND ACCOUNTING PROCEDURES (TASK 8)

This section addresses the requirements of Task 8 of the contract, and describes procedures to monitor and evaluate the effectiveness of the system, and procedures to account for the costs of operating the system. These requirements may be restated in the following manner:

- Determine system effectiveness
  - How much work is the system doing? (quantity)
  - How good is the work? (quality)
- Determine operating costs
  - How much is it costing us to do the work?

When effectiveness and costs are measured, this information may be used in management, policymaking and planning to reallocate resources towards a more effective system. The following sections list and describe recommended monitoring parameters. These parameters are summarized in Section 1.8.1.

10.1 DETERMINE SYSTEM EFFECTIVENESS

System effectiveness, (quantity and quality), is measured by two general methods:

- Collecting internal feedback
- Collecting external feedback

This section describes how internal and external feedback may be (a) collected and (b) used to evaluate system effectiveness. AAI recommends that feedback be collected and analyzed quarterly for the first two years, then yearly.

10.1.1 Collecting Internal Feedback

Internal feedback comes as the result of the system's systematically monitoring its own activities at key internal processing points. AAI recommends that the following internal information be collected about the EEITS. The processing forms described and illustrated in Section V provide the basis for these procedures.

(A) Input and Processing

- Number of resource inputs entering system
  - Processing point: Identification and Screening Function
  - Purpose: Assess input quantity
  - How collected: Count of the number of Resource Input Worksheets initiated during the designated time period (date is given on the Worksheet)
- Number of resource inputs indexed and filed
  - Processing point: File Maintenance and Storage Function
  - Purpose: Determine how many items are actually processed, versus how many are initially selected (above), assess workload
  - How collected: Count of the number of Worksheets completed during the time period

- Number of terms added to the EEITS Controlled Vocabulary
  - Processing point: Analysis, Classification and Indexing Function
  - Purpose: Determine new subject areas in system inputs
  - How collected: Compare old edition of vocabulary with new edition
- Number of abstracts written
  - Processing point: Repackaging Function
  - Purpose: Assess workload
  - How collected: Determine from Part II of the Worksheet (indicates if abstract should be written)

A number of other, more complex types of counts may be taken, including the following:

- Range or average of index terms assigned per resource input
- Number of resource inputs in each subject area
- Number of resource inputs in each format

These counts may all be taken from the completed Resource Input Worksheets. Since Part III of the Worksheet doubles as a keypunch form for later processing, it would be possible to keypunch the cataloging and indexing information quarterly and compile these and other types of statistics by computer. What is recommended as more feasible (at this stage) for the EEITS, however, is a more informal method. Several dozen Worksheets may be chosen randomly, and the index terms, subject areas, and formats analyzed for these and projected for the whole. There would also be value in simply leafing through the worksheets, noting trends and ranges of the data elements.

(B) Output

- Number of demand requests entering system
  - Processing point: Demand Requests Function

  - Purpose: Assess workload; determine effect of EEITS publicity
  - How collected: Count of Demand Request Search Forms for designated time period

- Time range/average time to respond to a query
  - Processing point: Demand Requests Function
  - Purpose: Determine response/turnaround time of system
  - How collected: Difference between the dates at the beginning and end of the Demand Request Search Forms

- Percent "successful"* demand request responses
  - Processing point: Demand Request Function
  - Purpose: Assess "hit rate" of system
  - How collected: From Part III, "Search Results," of Demand Request Search Form

- Number of current users and new users receiving automatic dissemination
  - Processing point: Automatic Dissemination Function
  - Purpose: Assess effect of EEITS publicity, workload
  - How collected: Count new user profiles, total number of profiles in User File

- Average number (or range) of documents sent on automatic distribution to users
  - Processing point: Automatic Dissemination Function
  - Purpose: Identify heavy users; assess general patterns of the use of the service
  - How collected: Count number of EEITS numbers per user number on EEITS Mailing Label Input Form (Figure 5-23) (could be done by sampling)

- Number of copies made of each document

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*A "successful" response to a request is defined here as a response to which the user clearly expresses satisfaction.

- Processing point: Automatic Dissemination Function
- Purpose: Determine which documents are requested most
- How collected: Compile tabulations from the Output Tabulation Print of the mailing label computer runs (Figure 5-25) (Could be done by sampeling)

Other, more complex variables which maybe counted include:

- Types of action taken on requests (number of bibliographies, documents sent, etc.)
- Formats preferred by requestors and users (for both demand requests and automatic dissemination)
- Subjects preferred by users (for both demand requests and automatic dissemination)

Again it is recommended that either the Demand Request Search Forms and User Profiles be sampled to take the above counts, or that an informal overview of the forms be done.

Figure 10-1 illustrates what a prototype reporting form might look like, which contains the information described above.

10.1.2 Collecting External Feedback

Enternal feedback consists of qualitative and subjective user reactions to the system: reactions to existing products and services, and reactions to simply interacting with the system (sometimes in requesting new products and services). External user feedback may be solicited on a continuing or periodic basis. Unsolicited feedback may also be received. Ways the EEITS may collect and record user feedback are described below.

A. EEITS Demand Request Search Form (Figure 5-19)

This form provides a place to record user comments, and directs the EEITS to solicit comments and opinions. This form will act continuously as a medium for capturing both solicited and unsolicited user feedback.

EEITS QUARTERLY REPORT

Jan. 1, 1980-March 31, 1980

INTERNAL PROCESSING COUNTS

A. Number of inputs:	137
B. Number of inputs processed: (Comment: 7 were duplicates)	130
C. Number of terms added to controlled vocabulary: (See attached list)	5
D. Number of abstracts written:	51
E. Range of terms assigned per document - Average (based on sample)	1-6 2
F. Top 5 subject terms assigned: (based on sample)	Air quality Water quality Air pollution Solid wastes Financing
G. Top 5 formats of inputs: (based on sample)	Technical reports Legislation Standards EIS Bibliographies
H. Number of demand requests:	201
I. Time range to respond to requests: - Average time: (based on sample)	1-10 days 2 days
J. Percent "successful" responses (based on sample)	82%
K. Number of profiles in system - New profiles	158 5

Figure 10-1 Prototype Quarterly Internal Feedback Report

EEITS QUARTERLY REPORT

Jan. 1, 1980-March 31, 1980

INTERNAL PROCESSING COUNTS

L. Range of documents sent on automatic distribution: - Average: (based on sample)	1-25 2
M. Number of copies made: most popular documents (top 10) (based on sample)	78-101 79-436 78-306 79-500 79-002 79-531 79-081 80-002 79-093 80-031
N. Types of action most frequently taken on requests: (based on sample)	Provided reference to document Sent document Referral to other organization
O. Top 5 formats preferred by users: (based on sample)	Bibliographies Summaries Directories Abstracts Legislation
P. Top 5 subjects preferred by users: (based on sample)	Air quality Solar energy Financing Environmental impacts Socioeconomic impacts

Figure 10-1 Prototype Quarterly Internal Feedback Report (Continued)

B. EEITS User Opinion Form

Figure 10-2 illustrates a User Opinion Form which may be used to solicit user feedback on a periodic basis. This form (together with a return mail franked envelope) may be sent to users who are being sent responses to their demand requests, and to users who receive materials or automatic distribution. The form may be sent with all outputs (not all will be returned), or with all outputs during, say, one month out of the quarter.

C. EEITS User Interest Profile Form (Figure 5-20)

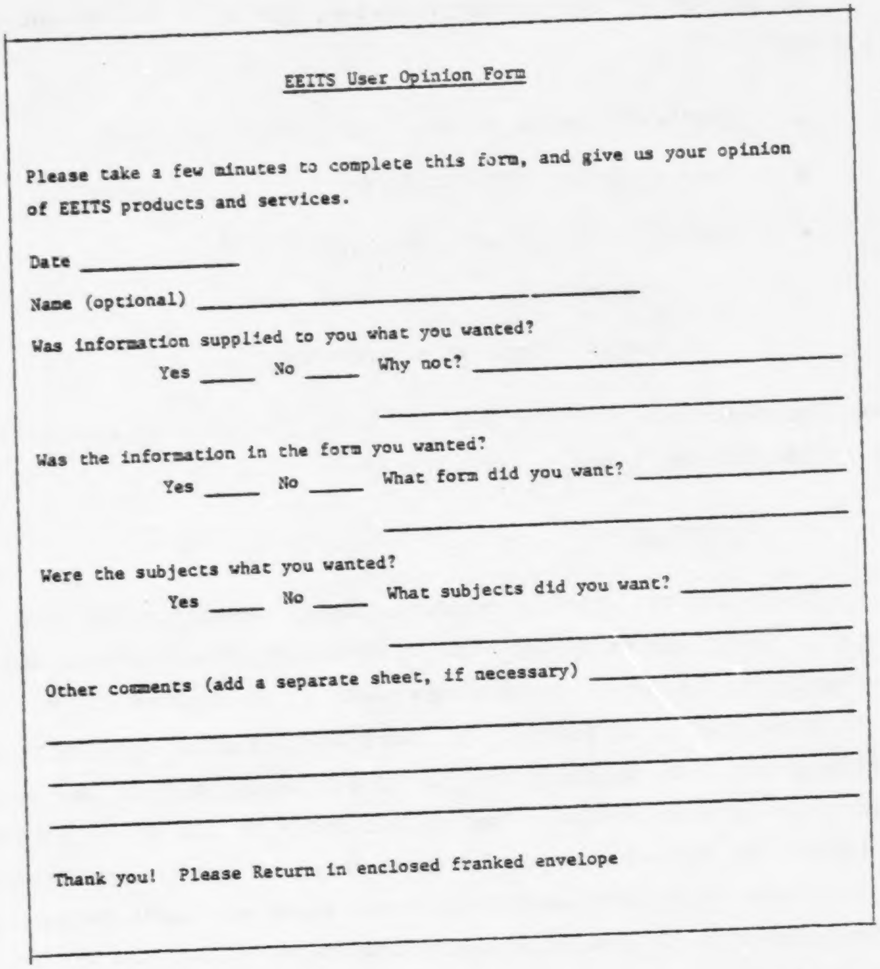
All users with registered profiles in the User File should be requested to update their profiles twice per year. A new User Interest Profile Form (together with a copy of the old profile, a cover letter, and a franked return envelope) is sent to them for the purpose of this update. The revised profile replaces the old profile in the User File. In addition, the form also provides space for comments from users.

Feedback may be tabulated and summarized from the three forms mentioned above. Depending on the quantity of date, all feedback may be analyzed, or samples may be taken. The following is a recommended outline for tabulation:

1. Number of Demand Request Search Forms with comments
2. Number of User Opinion Forms
3. Number of Profile Forms with comments
4. Total
5. Sample size analyzed (if sample is used)
6. Number of "negative" comments

   Type: Format
   Subjects
   Long delivery time
   Difficulty in access etc.

7. Positive comments, types (list by major type)
8. New products/services suggested



EEITS User Opinion Form

Please take a few minutes to complete this form, and give us your opinion of EEITS products and services.

Date ______________

Name (optional) ______________________________

Was information supplied to you what you wanted?

Yes _____ No _____ Why not? ______________________

Was the information in the form you wanted?

Yes _____ No _____ What form did you want? ______________________

Were the subjects what you wanted?

Yes _____ No _____ What subjects did you want? ______________________

Other comments (add a separate sheet, if necessary) ______________________

Thank you! Please Return in enclosed franked envelope

Figure 10-2 EEITS User Opinion Form

10.1.3 Using Feedback To Measure System Effectiveness

At the end of the quarterly period, the EEITS Management may be supplied with:

- Quarterly Report of Internal Processing Counts
- Tabulation of user feedback
- Copies of actual user feedback
  - Demand Request Forms with comments
  - User Opinion Forms
  - Profile Forms with comments

This section describes how this information may be used to assess effectiveness, of the EEITS, through quantity and quality.

A. Quantity

There are two uses for measurements of quantity: to judge if the scope of their system is the same or different from previous assessments, and to reallocate resources or redesign parts of the system if the change should be great enough to justify it. More specifically, the EEITS was originally designed to handly a maximum of 600 inputs a year, and satisfy approximately 400 user groups. The subject scope of the system as reflected in the Controlled Vocabulary, was designed to cover energy-environment topics. Quarterly counts of inputs, users, and terms added may indicate variance from this scope, however. If number of users remains very low, the system is not effectively transmitting information to all of Region VIII. If the number of inputs far exceeds the projected 600, the system may lose effectiveness in retaining too much diverse information, and in diverting too much staff time to processing (rather than providing outputs to users). Management review of these factors may then lead to such decisions as increasing publicity and user education (to increase the number of users) and revising input criteria and increasing staff (to controll input quantities while improving service delivery).

Quantity measures may also be used in assessing costs of system operation, as discussed in Section 10.2.

B. Quality

The EEITS may be operating within the projected scope and with the estimated number of inputs and users. However, if the products and services of the system are not of the quality needed by the user, system effectiveness again drops. The most obvious indicator of product and service quality is user feedback - positive comments; negative comments; how many of each; how the users would like the system improved, how many users continue to use the system over a period of time.

Internal processing counts can also be used to measure quality, though indirectly. Specifically, there should be some correlation between subjects and formats of system inputs (items F and G on Figure 10-1) and subjects and formats of user preferences (items O and P on Figure 10-1). If the system is not acquiring what the users need, quality products can not be produced efficiently, and the system is not being effective.

In summary, internal and external feedback can provide EEITS Management with information on the quantity and quality of EEITS services, from which system effectiveness may be assessed. Equally important, this information indicates to management where corrective action may be taken in order to improve quality, quantity, and system effectiveness.

10.2 DETERMINING OPERATING COSTS

The most effective system ever designed and implemented will not long endure if costs cannot be determined, or if costs are too high for continued operation. The EEITS must track its costs as they accrue, and report them quarterly just as it must track and report its effectiveness.

Costs of operating the system may be accounted for by utilizing the seven categories of costs presented in Section IX:

- Staff
- Space
- Equipment
- Computer time
- Purchased service
- Purchased materials
- Travel and living

Within each of these categories are fixed costs and variable costs. Fixed costs are costs which can be predicted in advance, (e.g., salary of major personnel, space rental). Variable costs depend on number of inputs, products, level of service, (e.g., photocopying, keypunch service, travel expenses).

AAI recommends that EPA monitor EEITS costs, both fixed and variable as they accrue, for the 6 areas listed above and report them on a quarterly basis. The EEITS Research Analyst should keep records of all these costs and submit them to the Management Committee quarterly (Cost elements unknown to the Research Analyst may be obtained by the Management Committee.) Figure 10-3 illustrates a sample cost reporting form. A sheet should be attached explaining the basis for costing (similar to Section 9.1 of this report) and appropriate explanations and receipts should also be attached.

Costs submitted quarterly should be reviewed concurrently with the review of system effectiveness, as the two sets of data are interrelated. Addition of many new users to the automatic dissemination service, for example, should correlate to higher computer costs for the mailing label program, and higher photocopying costs. What the new users think of the service should be revealed in the user feedback tabulation. Then the Management Committee can relate the increased costs to the quantity and quality of service, and plan accordingly, deciding then to cut back the service, or divert more funds towards supporting it.

EEITS COST REPORTING FORM

Time period: (Quarter) Prepared by:

COST COST CATEGORY	FIXED COSTS	VARIABLE COSTS	TOTAL
1. STAFF A. Salary, full time personnel B. Part-time assistants			
2. SPACE			
3. EQUIPMENT			
4. COMPUTER TIME A. Book catalog program B. Mailing label program			
5. Purchased svc. A. Programming B. Keypunching C. Photocopying			
6. Purchased Materials			
7. Travel and living			
TOTAL			

Figure 10-3 Sample EEITS Cost Reporting Form

SECTION XI. DESCRIPTION OF SYSTEM TESTING (TASK 9)

As required by Task 9 of the Contract, System Testing, AAI tested the EEITS under actual situations (to the extent possible) for a period of one month, from August 1 through August 31, 1978. This section describes:

- System Test Methodology
- Test Results
  - For each function
    - Activities performed
    - Work rates*
    - Products
- Problems encountered
- Discussion

---

* Work rates are given for AAI personnel, since no EPA personnel were available to be trained for the system during the test. These rates do not reflect a "learning curve," since AAI personnel were already familiar with system procedures.

11.1 SYSTEM TEST METHODOLOGY

Methodology for the system test was designed to come as close to "real life" as possible, in that actual documents and other inputs were used to create the files, against which real queries and profiles of real users were passed to develop test outputs.

11.1.1 Test Environment

The test ran for one month, as stipulated by the contract. AAI's test plan allowed for approximately two weeks of the test to be conducted in AAI's Philadelphia office. During this period forms were typed and reproduced, EEITS "mini-files" were set up, and the test system was implemented and run by AAI project personnel.

The latter test period of two weeks was conducted at the EPA Region VIII Office in Denver. All files and work in process were shipped to Denver, accompanied by the AAI project team. The system was set up in the EPA Region VIII Library and run with AAI providing the professional expertise and EPA providing clerical support. AAI held a series of briefings at periodic intervals to acquaint EPA personnel with the operational system.

The test was devised in this manner for the following reasons:

- The first period at AAI allowed project personnel to "debug" the system with the full resources of AAI's office support system (secretarial help, professional indexers, abstractors, etc.)
- The second period in Denver allowed EPA to become fully acquainted with an operational system and provide feedback

11.1.2 Functions to be Tested

All functions and procedures described in Section V of this report were tested, EXCEPT:

- Weeding procedures (Section 5.4.4.2)

- Procedures involving computer programs. (In some instances, computer procedures were simulated manually)
- Seminars, conferences and visits as EEITS outputs.

11.1.3 Test Inputs and Outputs

Inputs to the system test were supplied by EPA in advance of the date of test start-up. These inputs included:

- Sufficient information about 10 actual potential system users to permit creation of user profiles
- 10 actual queries (additional queries were input when the system was in test operation at Denver)
- Approximately 50 documents of assorted types, including EPA technical reports
- Sufficient biographical information about at least 5 of the technical experts in the OEA to permit creation of EEITS Search file records about them.

Additional inputs were gathered by AAI from directories of energy-environment information sources, and other documents were provided by EPA during the Denver phase of the test.

Output from the system test included:

- Responses to queries submitted
- Automatic dissemination products (created by matching the 10 user profiles against the resources)
- Abstracts

11.1.4 Test Monitoring and Evaluation

Throughout the test (during both the AAI and EPA phases), AAI collected the following monitoring information:

- Work rates for performing each function and major components of functions, e.g.,
  - Time required to classify and index an input
  - Time required to produce an abstract
  - Time required to respond to a query
  - Time required to match user needs against resources in order to create an automatic dissemination product
- Sample outputs of each function and major procedure, e.g., completed forms at various stages
- All system test outputs
- Any problems and comments, collected from AAI and EPA personnel

This monitoring information was analyzed according to two scales:

- Quantity: can the system produce outputs within projected expenditures of staff and other resources? Can procedures be learned and carried out efficiently? Is the "turnaround time" reasonable for query response? Can the system respond satisfactorily to all queries?
- Quality: is the EEITS Controlled Vocabulary sufficient to encompass the scope of test inputs? Are resources input to the system test useful in producing test outputs? Are the system test outputs of satisfactory quality?

11.2 TEST RESULTS

All functions of the system were tested. This section describes the procedures performed, actual work rates, and products (including sample system outputs) for each function.

11.2.1 Identification and Screening Function

A. Procedures performed

Identification and screening for test inputs was performed by the EPA Region VIII Librarian, since test inputs were all provided by EPA. (The AAI team filled out Part I of the Resource Input Worksheet before classification and indexing.) Other test inputs were provided by OEA personnel.

B. Work Rates

As these activities were performed by EPA in advance of the test, no information was obtained on time required to select inputs.

C. Products

Approximately 130 inputs of various types were selected by EPA for the test. Categories of inputs included:

- Abstracts
- Bibliographies
- Directories
- Handbooks
- Information Centers
- Legislation
- Management Reports
- Organizations
- Statistics
- Summaries
- Technical Experts (people)
- Technical reports

11.2.2 Analysis, Classification and Indexing Functions

A. Procedures Performed

All inputs mentioned in Section 11.2.1 above were analyzed, classified and indexed according to system procedures. The EEITS Controlled Vocabulary was augmented as needed to index the inputs. (The final augmented vocabulary is included in Appendix G.) Inputs were then marked with EEITS number, EEITS name, and date. Master sheets were typed for reproduction of catalog cards.

B. Work Rates

Approximately 20 minutes were required to analyze, classify and index a typical input. Approximately 5 minutes were required to type a typical catalog card master.

C. Products

Products from this function were of three kinds:

- Completed EEITS Resource Input Worksheets (See Figure 11-1 for an example)
- Typed master sheets of catalog cards (See Figure 11-2 for an example)
- Labeled inputs (See Figure 11-3 for an example)

11.2.3 Repackaging Function

A. Procedures Performed

Approximately 40 abstracts were either extracted from or written for documents input to the EEITS.

B. Work Rates

- Abstracts extracted: about 10 minutes were required per document to evaluate, photocopy and process an abstract contained in a document.
- Abstracts written: approximately 20-30 minutes were required to write an original abstract for a document.

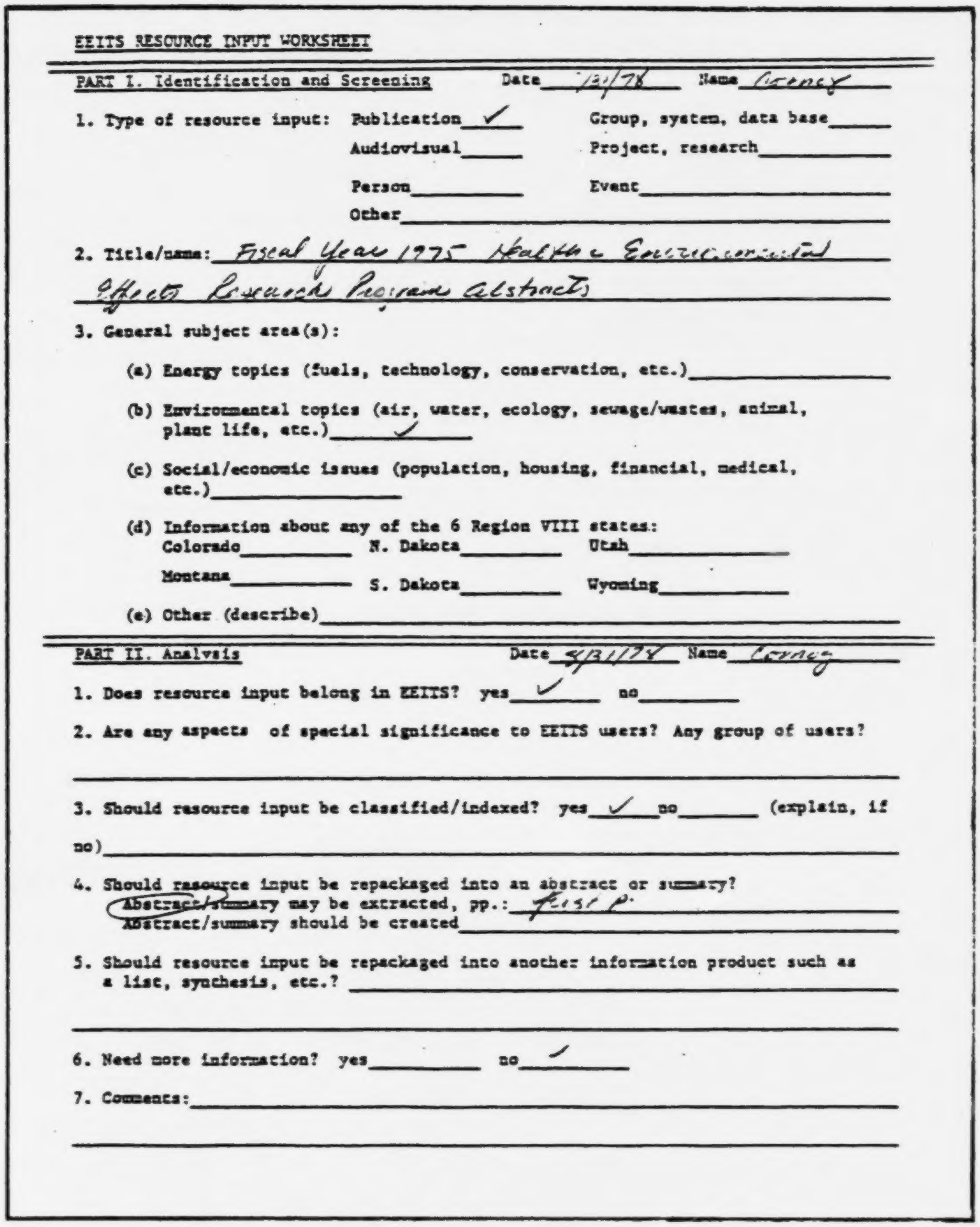
C. Products

A representative abstract is illustrated in Figure 11-4.

11.2.4 File Maintenance and Storage Function

A. Procedures Performed

Typed catalog card masters were photocopied on the sheets of catalog card stock which were then separated and individual access points underlined. All cards were then filed alphabetically by access point.



EEITS RESOURCE INPUT WORKSHEET

PART I. Identification and Screening Date 1/31/78 Name Carney

1. Type of resource input: Publication ✓ Group, system, data base ____ Audiovisual ____ Project, research ____ Person ____ Event ____ Other ____

2. Title/name: Fiscal Year 1975 Health & Environmental Effects Research Program abstracts

3. General subject area(s):

(a) Energy topics (fuels, technology, conservation, etc.) ____

(b) Environmental topics (air, water, ecology, sewage/wastes, animal, plant life, etc.) ✓

(c) Social/economic issues (population, housing, financial, medical, etc.) ____

(d) Information about any of the 6 Region VIII states:
Colorado ____ N. Dakota ____ Utah ____
Montana ____ S. Dakota ____ Wyoming ____

(e) Other (describe) ____

PART II. Analysis Date 3/31/78 Name Carney

1. Does resource input belong in EEITS? yes ✓ no ____

2. Are any aspects of special significance to EEITS users? Any group of users? ____

3. Should resource input be classified/indexed? yes ✓ no ____ (explain, if no) ____

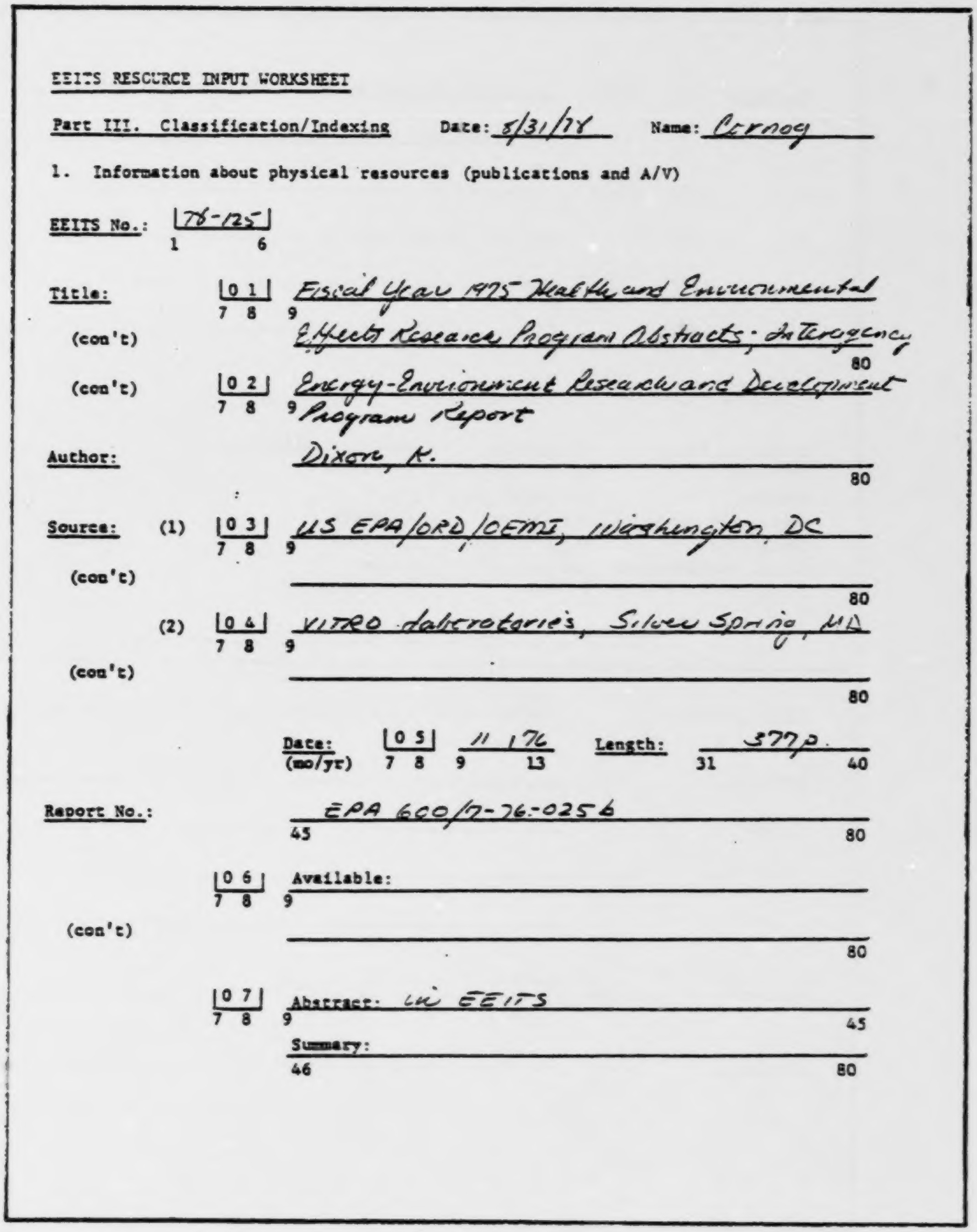
4. Should resource input be repackaged into an abstract or summary?
[✓ Abstract/summary] may be extracted, pp.: first p.
Abstract/summary should be created ____

5. Should resource input be repackaged into another information product such as a list, synthesis, etc.? ____

6. Need more information? yes ____ no ✓

7. Comments: ____

Figure 11-1. Completed EEITS Resource Input Worksheet



EEITS RESOURCE INPUT WORKSHEET

Part III. Classification/Indexing Date: 5/31/78 Name: Cernog

1. Information about physical resources (publications and A/V)

EEITS No.: 78-125 (1–6)

Title: 0 1 (7 8) (9) Fiscal Year 1975 Health and Environmental

(con't) Effects Research Program Abstracts: Interagency (80)

(con't) 0 2 (7 8) (9) Energy-Environment Research and Development Program Report

Author: Dixon, K. (80)

Source: (1) 0 3 (7 8) (9) US EPA/ORD/OEMI, Washington, DC

(con't) (80)

(2) 0 4 (7 8) (9) VITRO Laboratories, Silver Spring, MD

(con't) (80)

Date: (mo/yr) 0 5 (7 8) 11 / 76 (9–13) **Length:** 377p. (31–40)

Report No.: EPA 600/7-76-025b (45–80)

0 6 (7 8) **Available:** (9)

(con't) (80)

0 7 (7 8) **Abstract:** in EEITS (9–45)

Summary: (46–80)

Figure 11-1. Completed EEITS Resource Input Worksheet (cont'd)

Subjects: (1) |0 8| 7 8 9 Energy/environment research

(2) Environmental impacts 80

(3) |0 9| 7 8 9 ____

(4) ____ 80

(5) |1 0| 7 8 9 ____

(6) ____ 80

(Resource type: write in one below)

Technical report
Textbook
Handbook
Management report
Legislation
Guidelines/standards
Directory

Statistics
EIS & reviews
Technical data
Newsletter
Bibliography
Abstract(s)
Summary

Pamphlet/brochure
Microfiche
Film
Audiotape
Phonodisk
Slides
Other (specify)

|1 1| 7 8 9 Abstracts 45

Tech. Level: 46 N/A 80

Comments: |1 2| 7 8 9 ____

(con't) ____ 80

(con't) |1 3| 7 8 9 ____

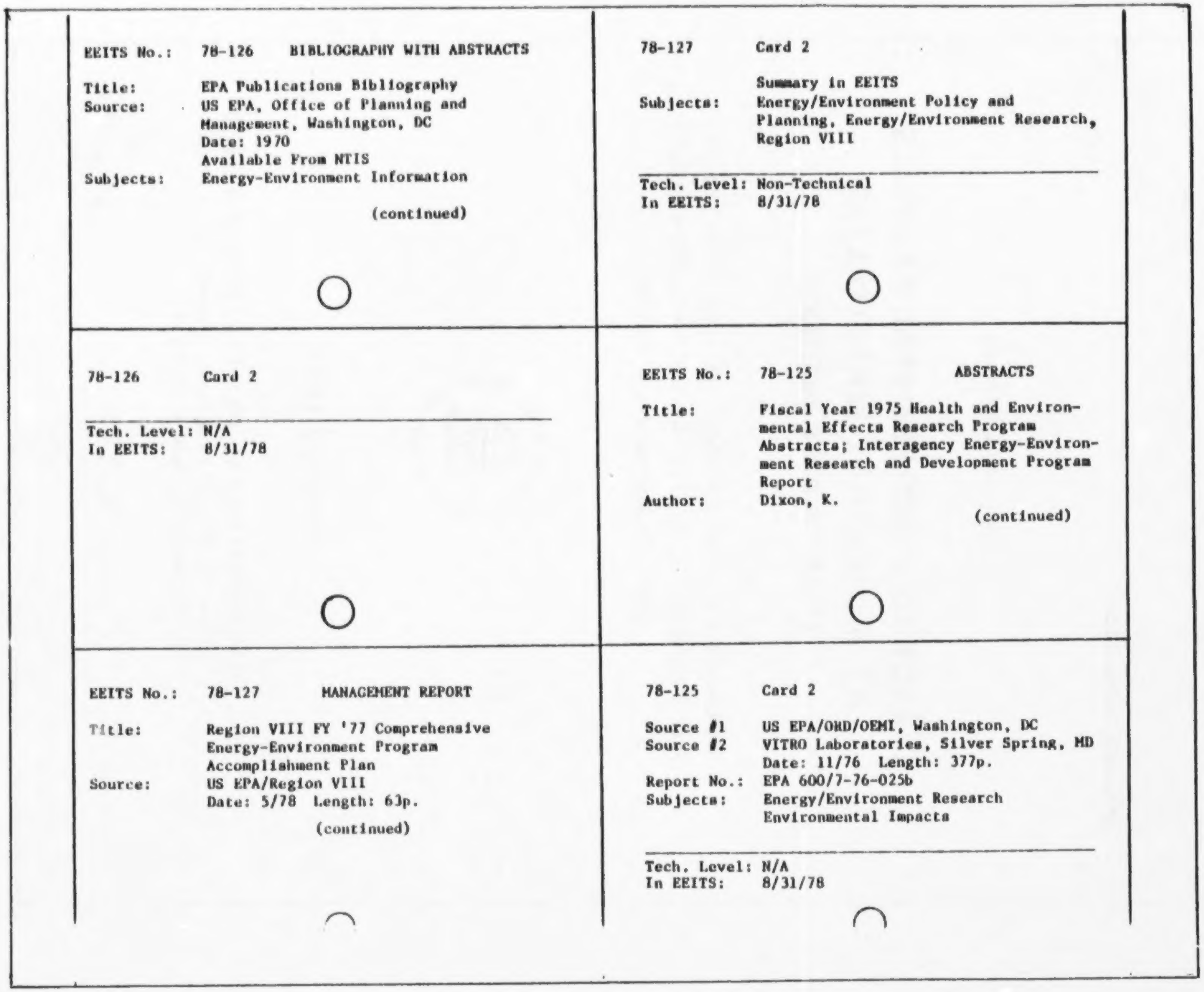
(con't) ____ 80

In EEITS: |1 4| 7 8 9 05/31/78 25 **Last Update:** 27 / / 42

Location: |1 5| 7 8 9 ____

____ 80

Figure 11-1. Completed EEITS Resource Input Worksheet (cont'd)



EEITS No.: 78-126 BIBLIOGRAPHY WITH ABSTRACTS

Title: EPA Publications Bibliography
Source: US EPA, Office of Planning and Management, Washington, DC
Date: 1970
Available From NTIS
Subjects: Energy-Environment Information

(continued)

78-126 Card 2

Tech. Level: N/A
In EEITS: 8/31/78

EEITS No.: 78-127 MANAGEMENT REPORT

Title: Region VIII FY '77 Comprehensive Energy-Environment Program Accomplishment Plan
Source: US EPA/Region VIII
Date: 5/78 Length: 63p.

(continued)

78-127 Card 2

Summary in EEITS
Subjects: Energy/Environment Policy and Planning, Energy/Environment Research, Region VIII

Tech. Level: Non-Technical
In EEITS: 8/31/78

EEITS No.: 78-125 ABSTRACTS

Title: Fiscal Year 1975 Health and Environmental Effects Research Program Abstracts; Interagency Energy-Environment Research and Development Program Report
Author: Dixon, K.

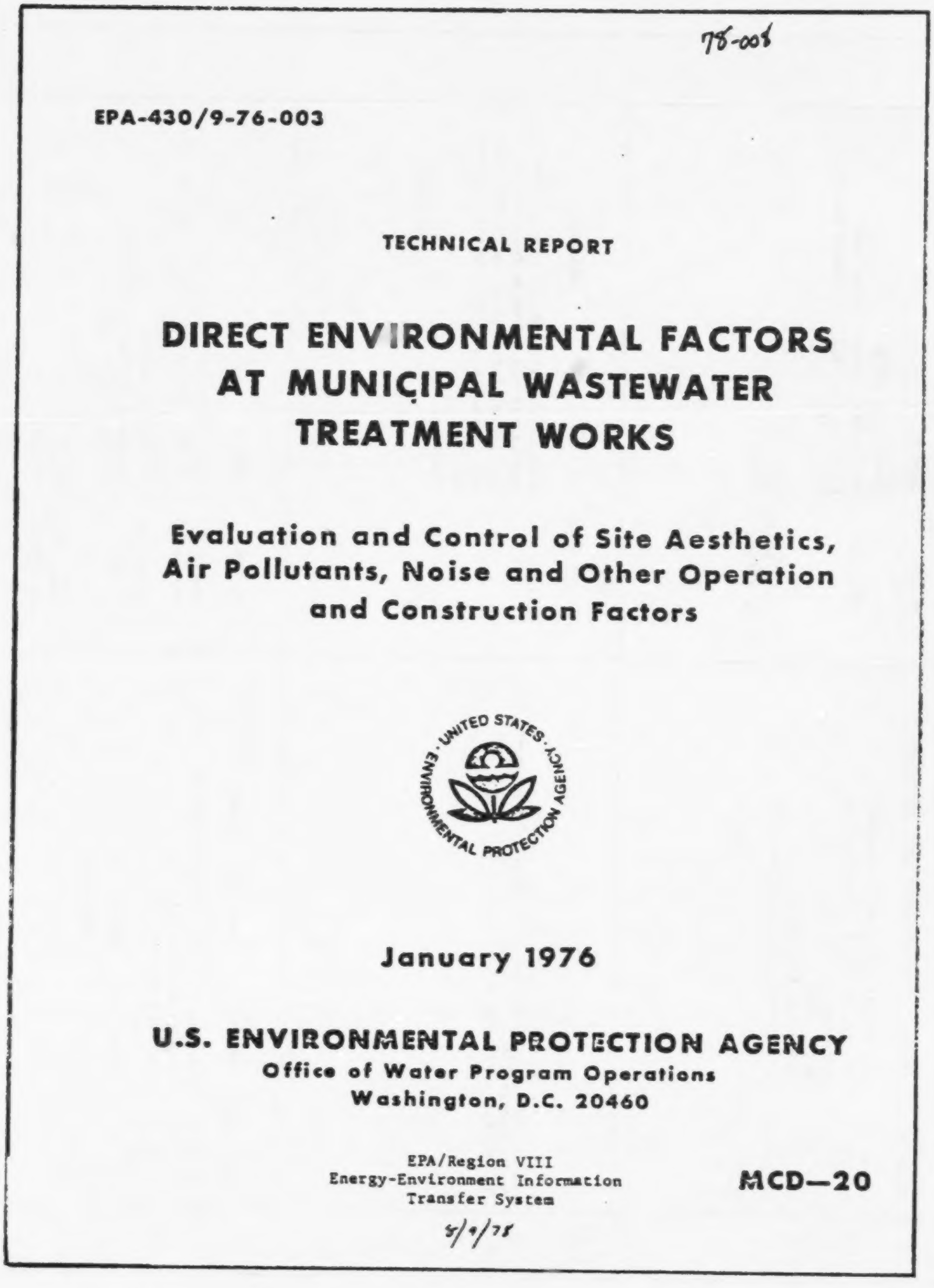
(continued)

78-125 Card 2

Source #1 US EPA/ORD/OEMI, Washington, DC
Source #2 VITRO Laboratories, Silver Spring, MD
Date: 11/76 Length: 377p.
Report No.: EPA 600/7-76-025b
Subjects: Energy/Environment Research
Environmental Impacts

Tech. Level: N/A
In EEITS: 8/31/78

Figure 11-2. Typed Master Sheet of Catalog Cards



78-008

EPA-430/9-76-003

TECHNICAL REPORT

DIRECT ENVIRONMENTAL FACTORS
AT MUNICIPAL WASTEWATER
TREATMENT WORKS

Evaluation and Control of Site Aesthetics,
Air Pollutants, Noise and Other Operation
and Construction Factors

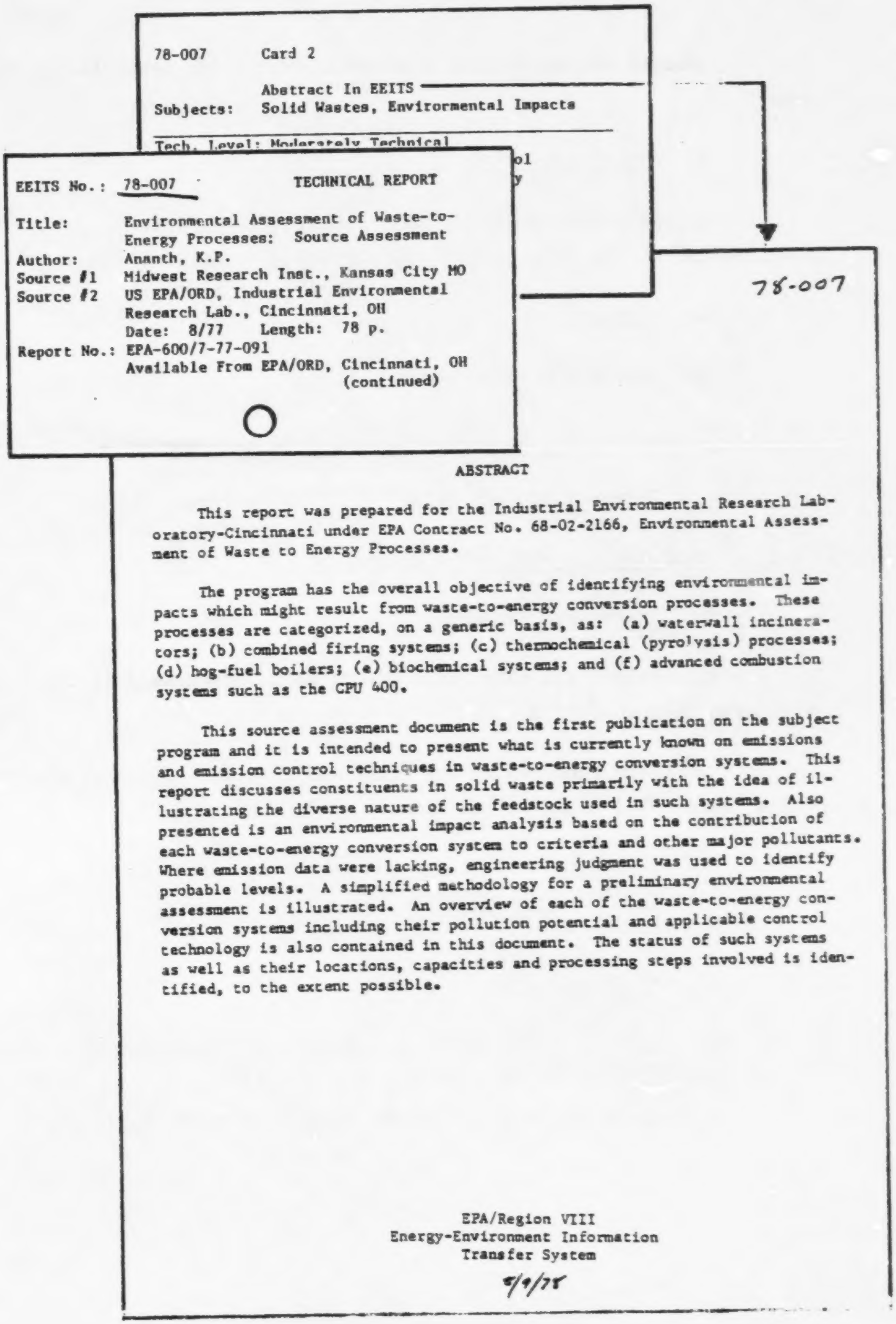
January 1976

U.S. ENVIRONMENTAL PROTECTION AGENCY
Office of Water Program Operations
Washington, D.C. 20460

EPA/Region VIII
Energy-Environment Information
Transfer System
5/9/78

MCD—20

Figure 11-3. Labeled Input



78-007 Card 2

Abstract In EEITS

Subjects: Solid Wastes, Envirormental Impacts

Tech. Level: Moderately Technical

ol

y

EEITS No.: 78-007 TECHNICAL REPORT

Title: Environmental Assessment of Waste-to-Energy Processes: Source Assessment

Author: Ananth, K.P.

Source #1 Midwest Research Inst., Kansas City MO

Source #2 US EPA/ORD, Industrial Environmental Research Lab., Cincinnati, OH

Date: 8/77 Length: 78 p.

Report No.: EPA-600/7-77-091

Available From EPA/ORD, Cincinnati, OH

(continued)

78-007

ABSTRACT

This report was prepared for the Industrial Environmental Research Laboratory-Cincinnati under EPA Contract No. 68-02-2166, Environmental Assessment of Waste to Energy Processes.

The program has the overall objective of identifying environmental impacts which might result from waste-to-energy conversion processes. These processes are categorized, on a generic basis, as: (a) waterwall incinerators; (b) combined firing systems; (c) thermochemical (pyrolysis) processes; (d) hog-fuel boilers; (e) biochemical systems; and (f) advanced combustion systems such as the CPU 400.

This source assessment document is the first publication on the subject program and it is intended to present what is currently known on emissions and emission control techniques in waste-to-energy conversion systems. This report discusses constituents in solid waste primarily with the idea of illustrating the diverse nature of the feedstock used in such systems. Also presented is an environmental impact analysis based on the contribution of each waste-to-energy conversion system to criteria and other major pollutants. Where emission data were lacking, engineering judgment was used to identify probable levels. A simplified methodology for a preliminary environmental assessment is illustrated. An overview of each of the waste-to-energy conversion systems including their pollution potential and applicable control technology is also contained in this document. The status of such systems as well as their locations, capacities and processing steps involved is identified, to the extent possible.

EPA/Region VIII
Energy-Environment Information
Transfer System

5/9/78

Figure 11-4. EEITS Document Abstract

Labeled resources (and abstracts) were filed sequentially by EEITS number.

B. Work Rates

Approximately 5 minutes were required to separate one set of cards, underline the access points, file the cards and file the document.

C. Products

Two products were produced:

- New Resources (card) file (see Typical cards, Figure 11-5)
- Document Storage File

11.2.5 Communication With Other Systems and Data Bases

A. Procedures Performed

All systems and data bases described in Appendix F were cataloged and entered into the EEITS.

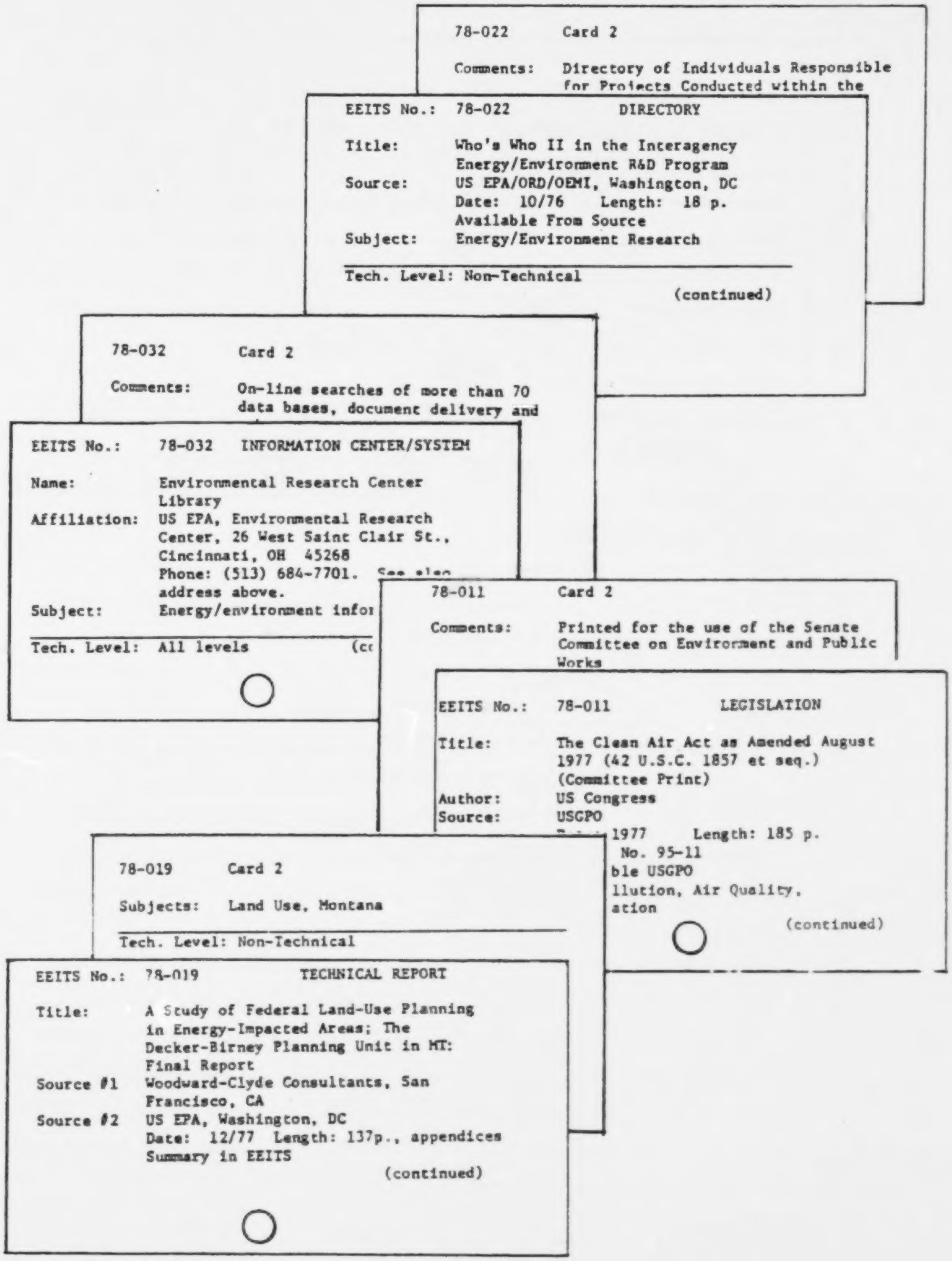
One query received by the EEITS was referred to one of these systems, the EPA/Region VIII Library. See Figure 11-6.

B. Work Rates

Not applicable

C. Products

- Records in the EEITS Search File for cataloged and indexed systems and data bases
- Query response utilizing these references (e.g., Figure 11-6)



78-022 Card 2

Comments: Directory of Individuals Responsible
for Projects Conducted within the

EEITS No.: 78-022 DIRECTORY

Title: Who's Who II in the Interagency
Energy/Environment R&D Program
Source: US EPA/ORD/OEMI, Washington, DC
Date: 10/76 Length: 18 p.
Available From Source
Subject: Energy/Environment Research

Tech. Level: Non-Technical
(continued)

78-032 Card 2

Comments: On-line searches of more than 70
data bases, document delivery and

EEITS No.: 78-032 INFORMATION CENTER/SYSTEM

Name: Environmental Research Center
Library
Affiliation: US EPA, Environmental Research
Center, 26 West Saint Clair St.,
Cincinnati, OH 45268
Phone: (513) 684-7701.
address above.
Subject: Energy/environment infor

Tech. Level: All levels

78-011 Card 2

Comments: Printed for the use of the Senate
Committee on Environment and Public
Works

EEITS No.: 78-011 LEGISLATION

Title: The Clean Air Act as Amended August
1977 (42 U.S.C. 1857 et seq.)
(Committee Print)
Author: US Congress
Source: USGPO
1977 Length: 185 p.
No. 95-11
ble USGPO
llution, Air Quality,
ation
(continued)

78-019 Card 2

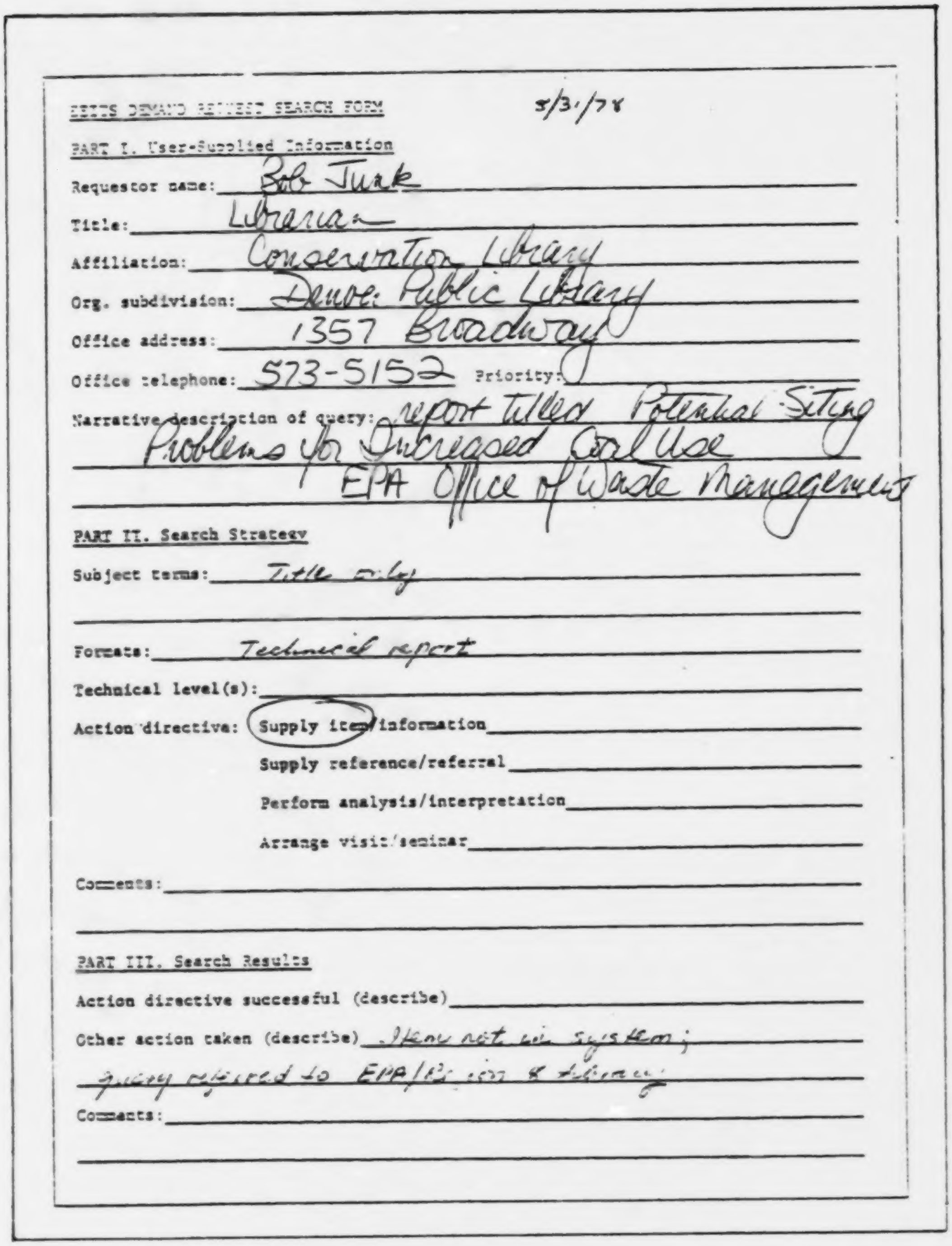
Subjects: Land Use, Montana

Tech. Level: Non-Technical

EEITS No.: 78-019 TECHNICAL REPORT

Title: A Study of Federal Land-Use Planning
in Energy-Impacted Areas; The
Decker-Birney Planning Unit in MT:
Final Report
Source #1 Woodward-Clyde Consultants, San
Francisco, CA
Source #2 US EPA, Washington, DC
Date: 12/77 Length: 137p., appendices
Summary in EEITS
(continued)

Figure 11-5. Sample Catalog Card Masters



EEITS DEMAND REQUEST SEARCH FORM 5/31/78

PART I. User-Supplied Information

Requestor name: Bob Juak

Title: Librarian

Affiliation: Conservation Library

Org. subdivision: Denver Public Library

Office address: 1357 Broadway

Office telephone: 573-5152 Priority:

Narrative description of query: report titled Potential Siting Problems for Increased Coal Use EPA Office of Waste Management

PART II. Search Strategy

Subject terms: Title only

Formats: Technical report

Technical level(s):

Action directive: [✓ Supply item/information]

Supply reference/referral

Perform analysis/interpretation

Arrange visit/seminar

Comments:

PART III. Search Results

Action directive successful (describe)

Other action taken (describe) Item not in system; query referred to EPA/Region 8 library

Comments:

Figure 11-6. Query Referred to Another System

11.2.6 Demand Request Function

A. Procedures Performed

Thirteen actual queries were put to the EEITS: 11 queries received prior to the test performed in Philadelphia, and two "live" queries which were received during the test performed at EPA in Denver. For all queries, the user priority was determined, a search strategy was developed, and references were located which would satisfy the query.

B. Work Rates

Approximately 20 minutes were required to respond to a typical test query.

C. Products

Figure 11-7 illustrates a typical query and response.

11.2.7 Automatic Dissemination Function

A. Procedures Performed

EPA provided sufficient information about 10 potential EEITS users to enable AAI to complete 10 User Interest Profile Forms. Then the interests expressed on these forms were matched against the EEITS Search File. Matches were found for 9 out of the 10 users.*

B. Work Rates

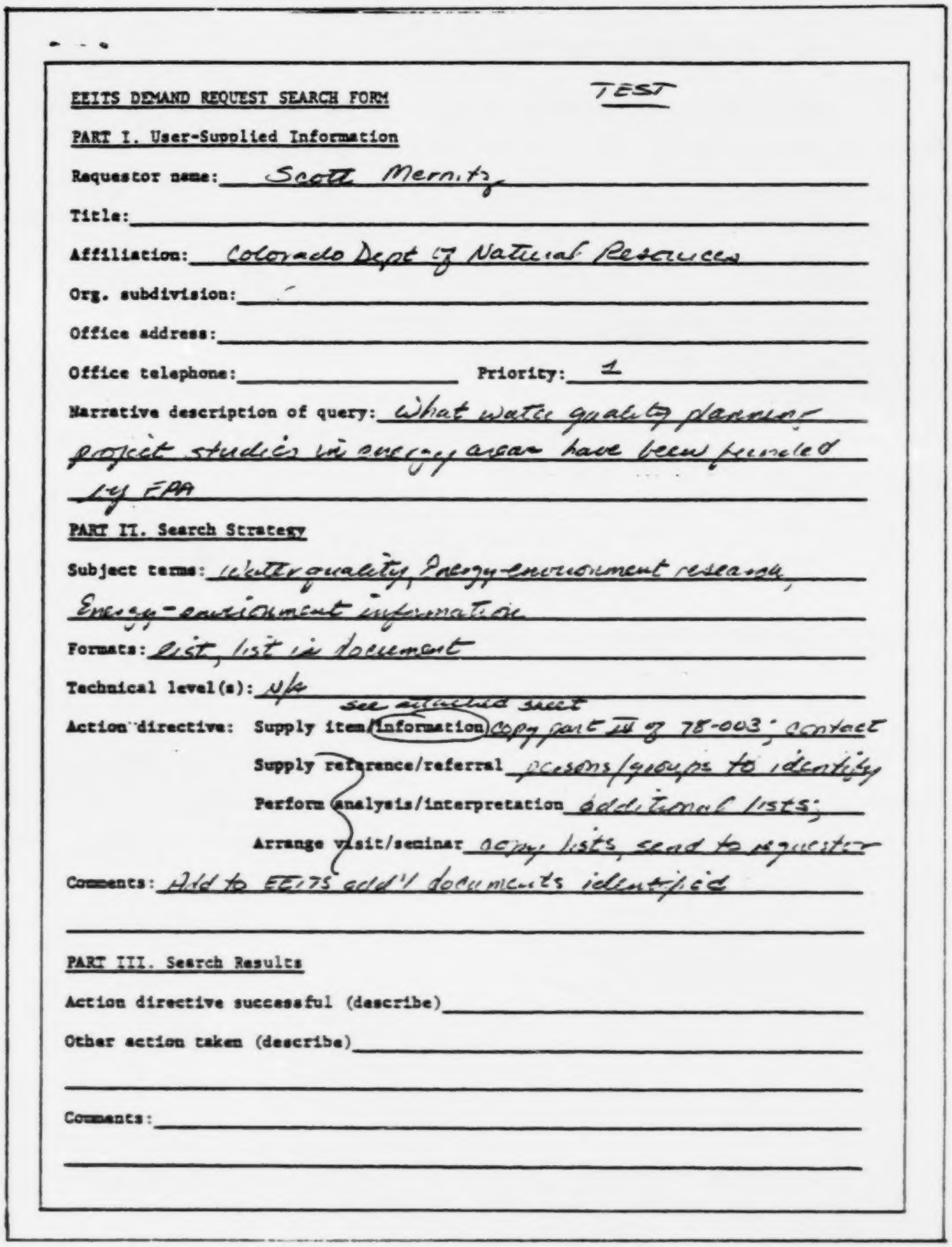
Approximately 15 minutes were required to look through the Search File to obtain references matching the interests of an individual user.

C. Products

- Completed User Interest Profile Forms for 10 potential system users (see Figure 11-8 for a typical form)
- Documents and referrals from the EEITS Search files which correspond to the interests expressed on the Profile Forms (See Figure 11-9 for the outputs of a typical match).

---

*The tenth user requested information in only one subject area: transportation; no documents about transportation were entered into the EEITS files during the test.



EEITS DEMAND REQUEST SEARCH FORM TEST

PART I. User-Supplied Information

Requestor name: Scott Mernitz

Title:

Affiliation: Colorado Dept of Natural Resources

Org. subdivision:

Office address:

Office telephone: Priority: 1

Narrative description of query: What water quality planning project studies in energy areas have been funded by EPA

PART II. Search Strategy

Subject terms: Water quality, Energy-environment research, Energy-environment information

Formats: list, list in document

Technical level(s): N/A

Action directive: Supply item/[✓ Information] see attached sheet copy part III of 78-003; contact

Supply reference/referral persons/groups to identify

Perform analysis/interpretation additional lists;

Arrange visit/seminar [illegible] lists, send to requester

Comments: Add to EEITS add'l documents identified

PART III. Search Results

Action directive successful (describe)

Other action taken (describe)

Comments:

Figure 11-7. Typical Query and Response

Water quality experts: Roger Dean EPA/8 837-2721
Denis Nelson EPA/8 837-2226

Energy environment research: expert: Terry Thoem EPA/8
837-5914

document:

EEITS No.: 78-003 **ABSTRACTS**

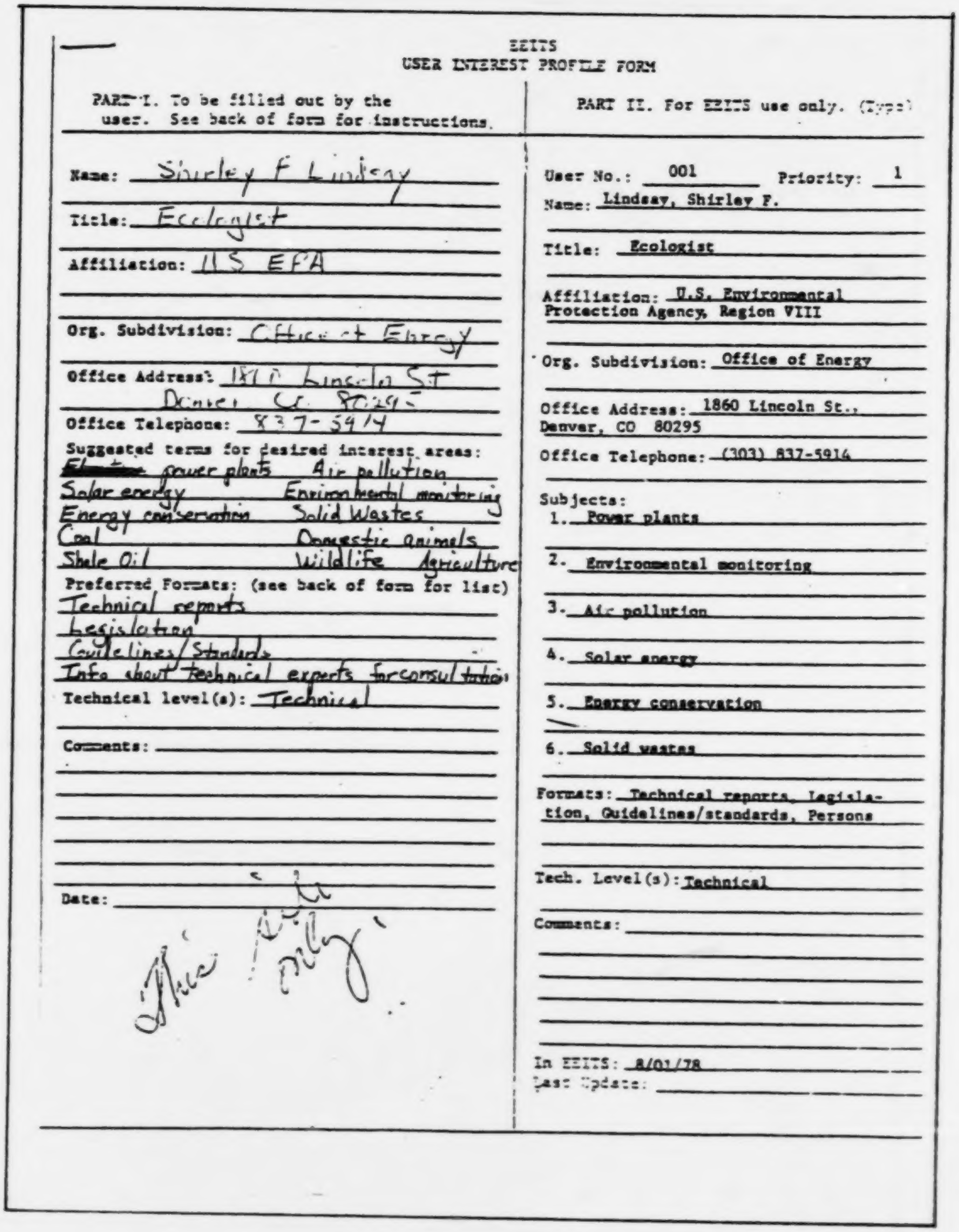
Title: Fiscal Year 1976 Health And Environmental Effects Research Program Abstracts
Author: Gerard, A.
Source #1 Automation Industries, Inc., Silver Spring, MD
Source #2 US EPA/ORD/OEMI, Washington, DC
Date: 12/76 **Length:** 346 p.
(continued)

Part IV, Ecological Effects
includes water quality
projects

Energy-environment information:

EPA ERC Library/Cincinnati
(513) 684-7701
EPA/8 Library 837-2560

Figure 11-7. Typical Query and Response (cont'd)



EEITS
USER INTEREST PROFILE FORM

PART I. To be filled out by the user. See back of form for instructions.

Name: Shirley F Lindsay

Title: Ecologist

Affiliation: US EPA

Org. Subdivision: Office of Energy

Office Address: 1860 Lincoln St
Denver Co 80295

Office Telephone: 837-5914

Suggested terms for desired interest areas:

~~Electric~~ power plants	Air pollution
Solar energy	Environmental monitoring
Energy conservation	Solid Wastes
Coal	Domestic animals
Shale Oil	Wildlife Agriculture

Preferred Formats: (see back of form for list)
Technical reports
Legislation
Guidelines/Standards
Info about technical experts for consultation

Technical level(s): Technical

Comments:

Date:

PART II. For EEITS use only. (Type)

User No.: 001 Priority: 1

Name: Lindsay, Shirley F.

Title: Ecologist

Affiliation: U.S. Environmental Protection Agency, Region VIII

Org. Subdivision: Office of Energy

Office Address: 1860 Lincoln St., Denver, CO 80295

Office Telephone: (303) 837-5914

Subjects:
1. Power plants
2. Environmental monitoring
3. Air pollution
4. Solar energy
5. Energy conservation
6. Solid wastes

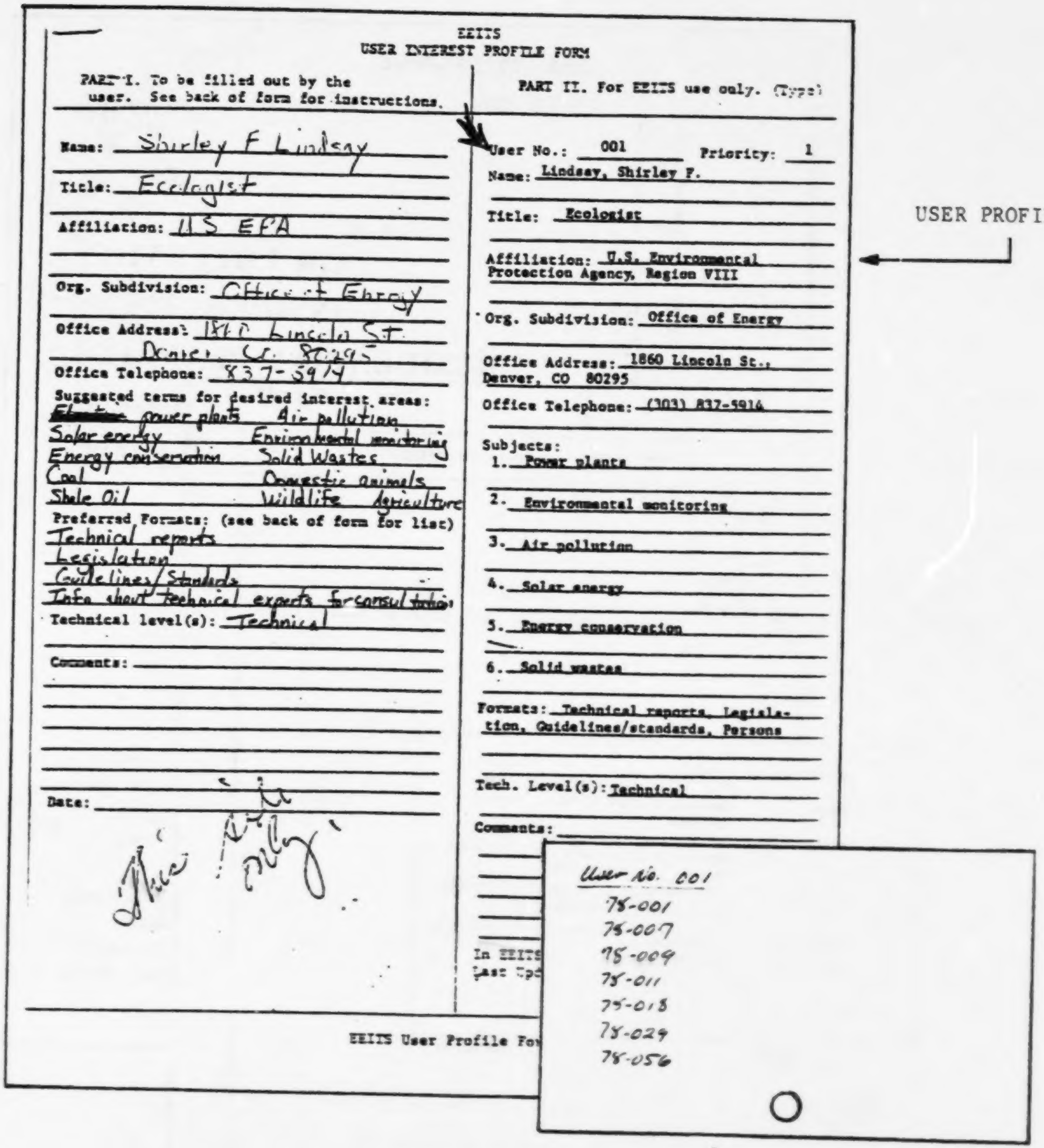
Formats: Technical reports, Legislation, Guidelines/standards, Persons

Tech. Level(s): Technical

Comments:

In EEITS: 8/01/78
Last Update:

Figure 11-8. Typical User Interest Profile Form



EEITS
USER INTEREST PROFILE FORM

PART I. To be filled out by the user. See back of form for instructions.

Name: Shirley F Lindsay
Title: Ecologist
Affiliation: US EPA
Org. Subdivision: Office of Energy
Office Address: 1860 Lincoln St.
Denver, Co. 80295
Office Telephone: 837-5914
Suggested terms for desired interest areas:
~~Electric~~ power plants Air pollution
Solar energy Environmental monitoring
Energy conservation Solid Wastes
Coal Domestic animals
Shale Oil Wildlife Agriculture
Preferred Formats: (see back of form for list)
Technical reports
Legislation
Guidelines/Standards
Info about technical experts for consultation
Technical level(s): Technical
Comments:
Date:

PART II. For EEITS use only. (Type)

User No.: 001 Priority: 1
Name: Lindsay, Shirley F.
Title: Ecologist
Affiliation: U.S. Environmental Protection Agency, Region VIII
Org. Subdivision: Office of Energy
Office Address: 1860 Lincoln St., Denver, CO 80295
Office Telephone: (303) 837-5914
Subjects:
1. Power plants
2. Environmental monitoring
3. Air pollution
4. Solar energy
5. Energy conservation
6. Solid wastes
Formats: Technical reports, Legislation, Guidelines/standards, Persons
Tech. Level(s): Technical
Comments:
In EEITS
Last Upd

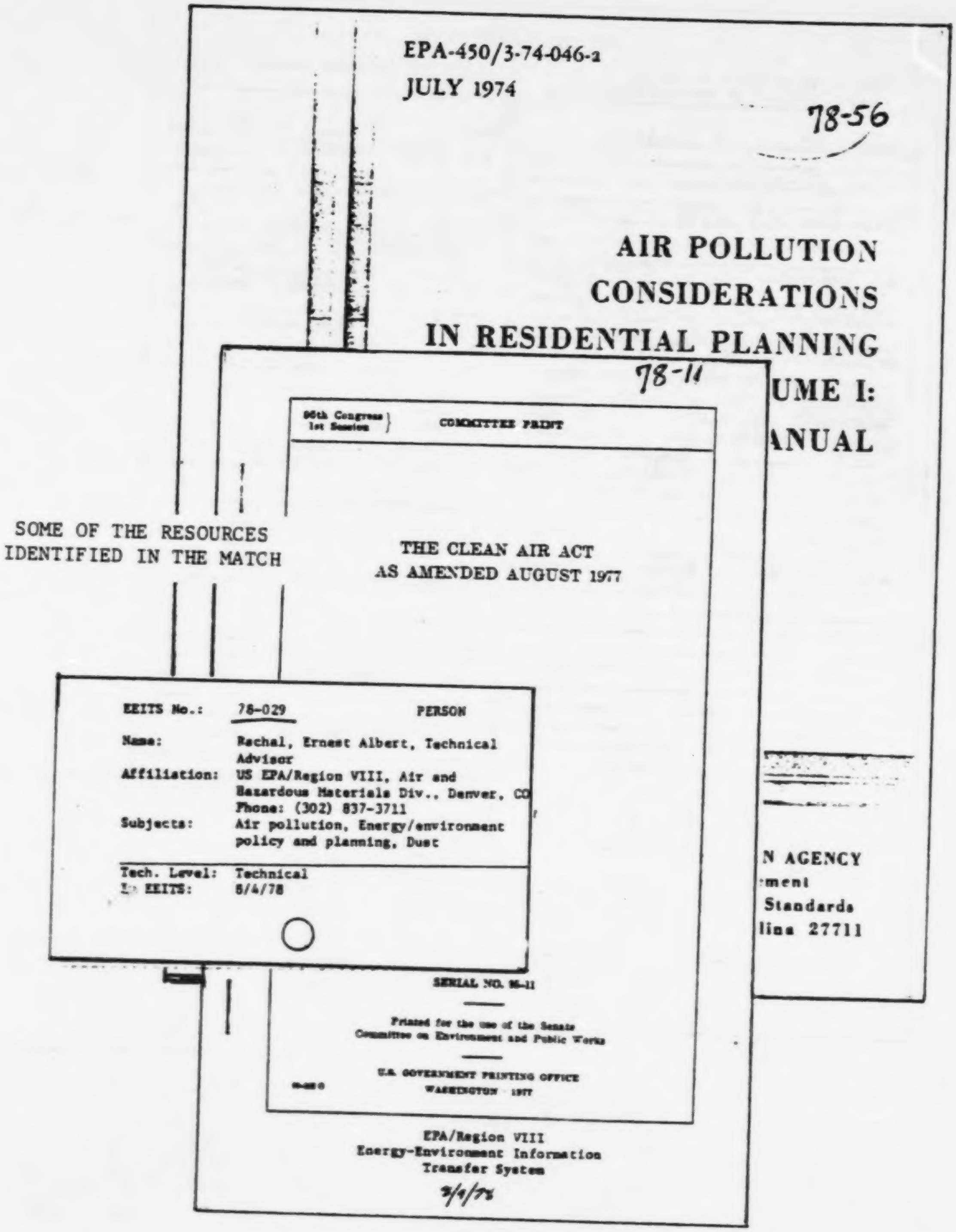
EEITS User Profile For

User No. 001
78-001
78-007
78-009
78-011
78-018
78-029
78-056

USER PROFILE

RECORD OF MATCHES WITH SEARCH FILE (EEITS NUMBERS)

Figure 11-9. Automatic Dissemination: Typical Match, With Outputs



EPA-450/3-74-046-a
JULY 1974

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95th Congress
1st Session

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U.S. GOVERNMENT PRINTING OFFICE
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EPA/Region VIII
Energy-Environment Information
Transfer System
8/4/78

EEITS No.:	78-029	PERSON
Name:	Rachal, Ernest Albert, Technical Advisor	
Affiliation:	US EPA/Region VIII, Air and Hazardous Materials Div., Denver, CO Phone: (302) 837-3711	
Subjects:	Air pollution, Energy/environment policy and planning, Dust	
Tech. Level:	Technical	
In EEITS:	8/4/78	

SOME OF THE RESOURCES
IDENTIFIED IN THE MATCH

Figure 11-9. Automatic Dissemination:
Typical Match, With Outputs (cont'd)

11.3 PROBLEMS ENCOUNTERED

No major problems were encountered during the test. However, some minor areas of concern arose, which are discussed briefly below.

A. Authority for Search File Entries

During indexing of the test documents, it became evident that a standard was needed to establish a uniform approach to corporate names. Since the document base for the test was quite small, lack of a standard did not impede locating relevant documents in the file. However, when the EEITS is implemented, a standard should be established immediately before additional indexing is begun.

B. Expansion of EEITS Controlled Vocabulary

During indexing, inputs were processed in subject areas not fully covered in the EEITS Controlled Vocabulary. As a result, the vocabulary was updated to include these subject areas. (The updated vocabulary is included as Appendix G to this report.)

C. Simulation of Computer Procedures

Although the EEITS was designed for ready conversion to computer-assisted operation, no computer design or implementation work was provided for in the current system design and testing phase. Therefore, the test substituted manual for computer-assisted operation.

D. Responding to Queries Using a Small Resource File

The small size of the Search File and Document Storage File (about 100 items) during the test made it impossible to produce the same scope of query response as would be possible during actual system operation, when the resources in the EEITS could number a thousand or more. Specifically, test responses to queries contained a higher proportion of referrals to experts and other information sources and systems and a lower proportion of references to documents than would likely be provided for queries produced during system operation. This did not constitute a problem, as such, as the EEITS is designed to provide referrals to outside sources if relevant documents cannot be identified in the EEITS collection.

11.4 DISCUSSION

The EEITS has been designed to respond to the information needs of Region VIII energy-environment policy makers identified in a user needs survey, and to accommodate the constraints and resources available in the EPA/Region VIII Office to satisfy these needs. The successful completion of the EEITS system test (Task 9) has shown that the EEITS, when implemented by EPA/Region VIII, will provide a workable and effective system for transferring energy-environment information to governmental policy and decision makers and other users within Region VIII. The test has also provided EPA with a nucleus of information resources upon which to build in implementing the system.

Thus, a microcosm of an EEITS now exists as a result of the test. This small resource collection and the system as a whole are products developed according to current (1978) needs of Region VIII policy makers and the current priorities of EPA in Region VIII to respond to these needs. These needs are, however, constantly changing, as are EPA's priorities for providing services to the Region. If the EEITS is implemented in the near future, monitoring procedures provided for in the system design (see Section X) may be used to assess changes in user needs and EPA's priorities, and to redirect the objectives and procedures of the EEITS accordingly.